



# Service Manual

ORDER NO.  
**RRV1285**

FILE-TYPE COMPACT DISC PLAYER

# **PD-F1004**

● Refer to the service manual RRV1225 for PD-F904/KU/CA.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	PD-F1004		
KU/CA	○	AC120V	

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## 1. CONTRAST OF MISCELLANEOUS PARTS

### NOTES :

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

$560\Omega \rightarrow 56 \times 10^1 \rightarrow 561$	RD1/8PM [5] [6] [1] J
$47k\Omega \rightarrow 47 \times 10^3 \rightarrow 473$	RD1/4PS [4] [7] [3] J
$0.5\Omega \rightarrow 0R5$	RN2H [0] R [5] K
$1\Omega \rightarrow 010$	RS1P [0] [1] [0] K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

$5.62k\Omega \rightarrow 562 \times 10^3 \rightarrow 5621$	RM1/4PC [5] [6] [2] [1] F
------------------------------------------------------------	---------------------------

PD-F1004/KU/CA and PD-F904/KU/CA have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		PD-F904/KU/CA	PD-F1004/KU/CA	
NSP	● Exterior 28P F.F.C/30V 34P F.F.C/30V Rear base (FE)	PDD1164 Not used PNA2218	Not used PDD1159 PNA2228	[*1, No. 6 (Page 10)]
	MAIN BOARD assy	PWZ3077	PWZ3086	
	OUTPUT BOARD assy	PWZ3080	PWZ3089	
	I/O CONNECTOR BOARD assy	PWX1390	Not used	
	I/O BOARD assy	Not used	PWZ3092	[Refer to Fig. 2]
	VIDEO BOARD assy	Not used	PWZ3095	
	POWER BOARD assy	PWZ3065	PWZ2721	
	JOINT BOARD assy	PWZ3074	PWZ2732	
	● Door Panel Assy Clear plate Sheet G Door stay Door panel 28P F.F.C/30V 34P F.F.C/30V	PAM1681 PAM1680 PNB1534 PNW2572 PDD1160 Not used	PAM1637 PAM1690*2 PNB1537 PNW2596 Not used PDD1158	[(*2: Sheet GRAY)] [*1, No. 29 (Page 14)]
	Sheet Lens A (PMMA) Reflector	Not used Not used Not used	PNM1268 PNW2467 PRW1369	
NSP	LED A BOARD assy	Not used	PWZ2733	[Refer to Fig. 1]
NSP	LED B BOARD assy	Not used	PWZ2735	
NSP	DISPLAY BOARD assy	PWZ3068	PWZ2724	
	SWITCH BOARD assy	PWZ3070	PWZ2726	
	ESCUOTCHEON BOARD assy	PWZ3072	PWZ2730	
NSP	● Packing Operating instructions (English) Wireless remote control unit Packing case Cord with plug (Video)	PRB1227 PWW1104 PHG2133 Not used	PRB1230 PWW1105 PHG2142 VDE1034	

Note \*1: Refer to "5. EXPLODED VIEWS, PACKING AND PARTS LIST" in the service manual RRV1225.

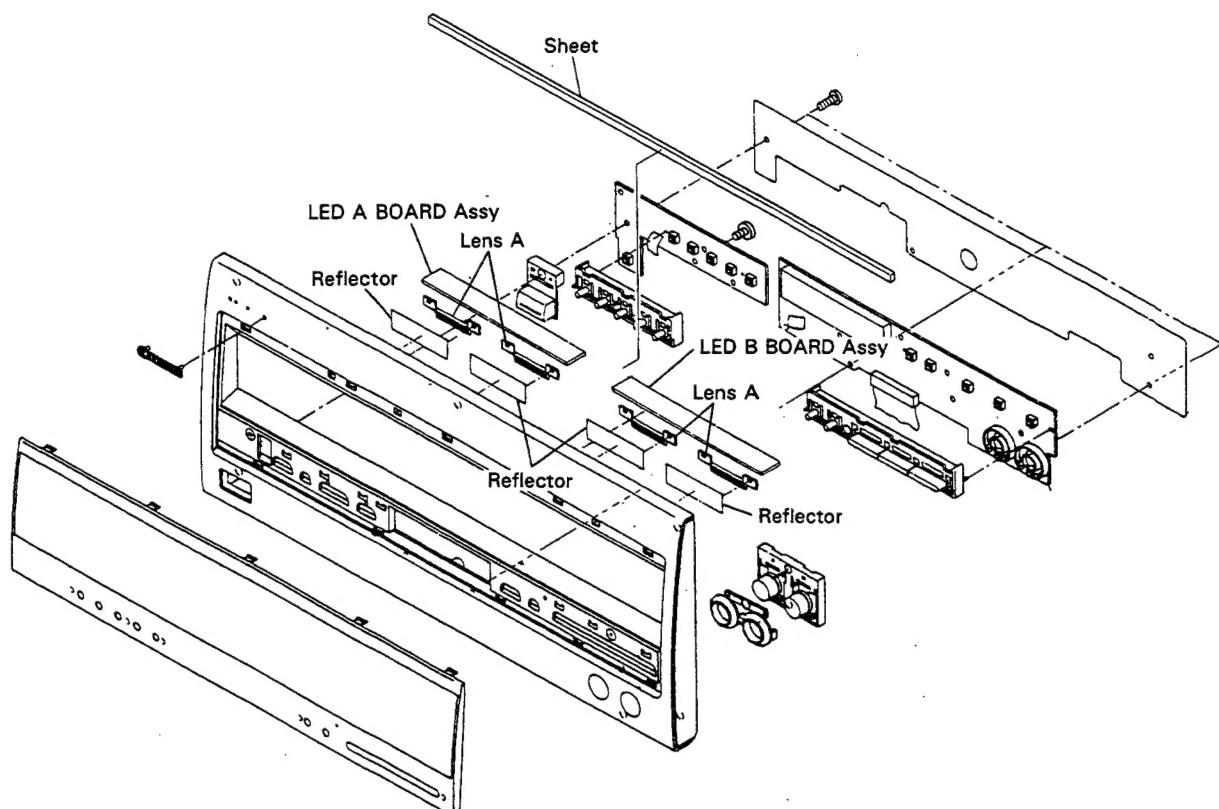


Fig. 1

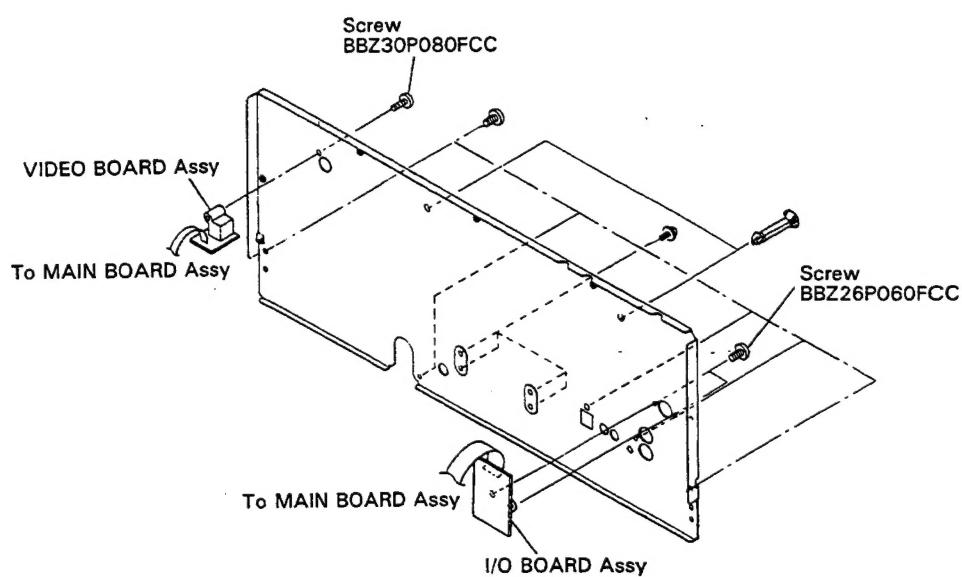


Fig. 2

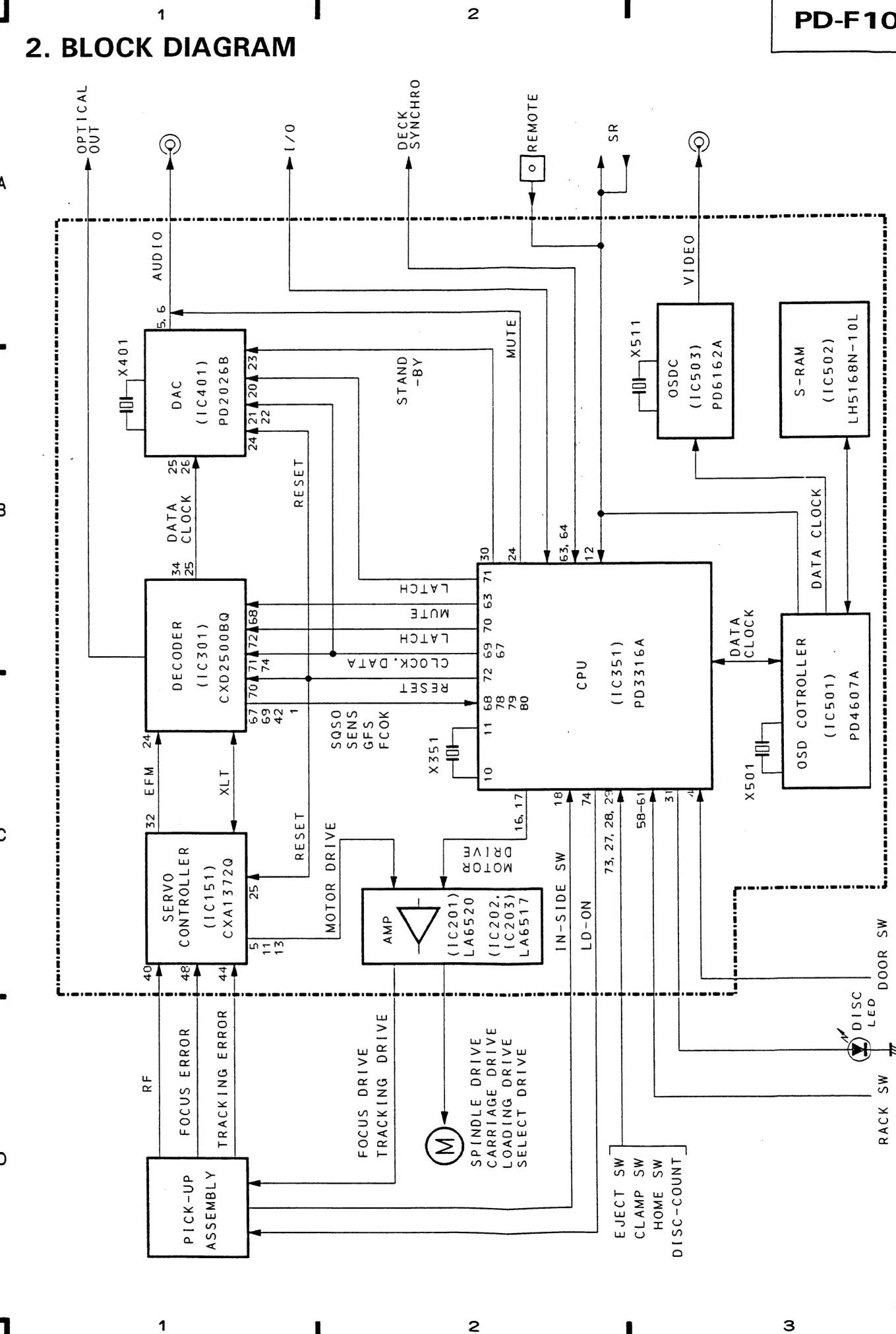
## PCB PARTS LIST

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
<b>LIST OF ASSEMBLIES</b>							
NSP	MOTHER BOARD ASSY		PWM1978		C157, C164, C167, C169, C205		CKSQYB103K50
	MAIN BOARD ASSY		PWZ3086		C215, C218, C219, C225, C230		CKSQYB103K50
NSP	OUTPUT BOARD ASSY		PWZ3089		C308		CKSQYB103K50
	I/O BOARD ASSY		PWZ3092		C158, C159, C161, C163, C303		CKSQYB104K25
NSP	VIDEO BOARD ASSY		PWZ3095		C522		CKSQYB104K25
NSP	SUB BOARD ASSY		PWX1319		C306		CKSQYB152K50
	POWER BOARD ASSY		PWZ2721		C155		CKSQYB182K50
	DISPLAY BOARD ASSY		PWZ2724		C170		CKSQYB332K50
NSP	SWITCH BOARD ASSY		PWZ2726		C156, C168		CKSQYB333K25
NSP	ESCUTCHEON BOARD ASSY		PWZ2730		C171, C172		CKSQYB472K50
NSP	JOINT BOARD ASSY		PWZ2732		C307		CKSQYB473K25
NSP	LED A BOARD ASSY		PWZ2733		C352, C353, C355, C361, C367		CKSQYF103Z50
NSP	LED B BOARD ASSY		PWZ2735		C461, C503-C505		CKSQYF103Z50
					C304, C305, C406, C410, C414		CKSQYF104Z25
					C423, C424, C75-C79		CKSQYF104Z25
<b>MAIN BOARD ASSY</b>							
SEMICONDUCTORS							
IC151			CXA1372Q				
IC301			CXD2500BQ				
△ IC202, IC203			LA6517		VR151, VR152 (22kΩ)		RCP1084
△ IC201			LA6520		R394		RD1/6PM102J
IC502			LH5168N-10L		R213, R231-R233, R367, R511		RD1/6PM103J
IC504			MM1031XS		R522		RD1/6PM103J
IC405			NJM4558M		R226, R227, R439-R442		RD1/6PM104J
IC401			PD2026B (L)				
IC351			PD3316A				
IC501			PD4607A				
IC503			PD6162A				
Q501			2SC1740S				
Q391			2SC2412K		R216		RD1/6PM123J
Q403, Q404			2SD2114K		R224, R228, R229		RD1/6PM134J
Q322, Q405			DTC124EK		R221, R222		RD1/6PM184J
D391-D397, D501					R395, R396		RD1/6PM223J
			1SS254		R391, R393		RD1/6PM244J
COILS AND FILTERS							
L511			LAU220J		R205, R210, R215, R219, R225		RD1/6PM470J
L501			LFA100K		R230		RD1/6PM470J
L351			LFA820K		R445, R446		RD1/6PM471J
					R253, R504		RD1/6PM473J
					R523		RD1/6PM750J
CAPACITORS							
C435-C438			CCSQCH050C50		R521		RD1/6PM912J
C513			CCSQCH080D50		Other Resistors		RS1/10S□□□
C354, C393			CCSQCH101J50				
C403			CCSQCH120J50				
C514			CCSQCH150J50				
C404			CCSQCH220J50				
C516			CCSQCH330J50				
C429, C430			CCSQCH390J50				
C515			CCSQCH470J50				
C152, C153			CEAS101M10				
C511, C512, C521			CEAS101M16				
C433, C434			CEAS220M25				
C208, C209, C301, C302, C401			CEAS330M16				
C431, C432, C71-C74			CEAS330M16				
C351, C501			CEAS331M6R3				
C523			CEAS471M6R3				
C160, C162			CEAS4R7M50				
C309			CEASR47M50				
C413, C415, C416, C421			CFTYA104J50				
C210			CKCYF103Z50				
<b>OUTPUT BOARD ASSY</b>							
COILS AND FILTERS							
L391, L395, L396							
CAPACITORS							
C397, C399							
C322							
C441, C442							
C323							
C388, C389, C398							
C321							

## 2. BLOCK DIAGRAM

Mark	No.	Description	Parts No.
<b>OTHERS</b>			
JA401	2P PIN JACK	PKB1009	
JA393	MINI JACK	PKN1005	
JA391, JA392	JACK (REMOTE CONTROL)	RKN1004	
JA301	OPTICAL OUTPUT JACK	TOTX178	
<b>I/O BOARD ASSY</b>			
SEMICONDUCTORS			
D1301-D1314		ISS254	
CAPACITORS			
C1301-C1305		CKPUYB101K50	
C1306-C1308		CKPUYF103Z25	
RESISTORS			
All Resistors		RD1/6PM□□□J	
OTHERS			
JA394	CONNECTOR	PKP-038	
<b>VIDEO BOARD ASSY</b>			
OTHERS			
JA501	1P PIN JACK	VKB1063	
<b>POWER BOARD ASSY</b>			
SEMICONDUCTORS			
△ IC22		NJM79M05FA	
△ IC21		PQ05RR12	
△ D11-D14, D52		11ES2	
D54		MTZJ18B	
CAPACITORS			
C52		CEAS101M35	
C27, C28		CEAS471M6R3	
C11, C13, C15-C17		CKCYF103Z50	
C25, C26 (6800μF/16V)		VCH1123	
RESISTORS			
All Resistors		RD1/6PM□□□J	
OTHERS			
△ POWER TRANSFORMER/10W TERMINAL		PTT1297 RKC-061	
<b>DISPLAY BOARD ASSY</b>			
SEMICONDUCTORS			
Q702-Q705		2SA933S	
D703, D704		ISS254	
SWITCHES AND RELAYS			
S703, S707, S708, S711, S712		PSG1006	
S715, S716		PSG1006	
RESISTORS			
All Resistors		RD1/6PM□□□J	
OTHERS			
CN701	34P FFC CONNECTOR	9604S-34F	
V701	FL TUBE	PEL1079	

Mark	No.	Description	Parts No.
<b>SWITCH BOARD ASSY</b>			
SEMICONDUCTORS			
D701, D702		ISS254	
SWITCHES AND RELAYS			
S701, S702, S709, S710		PSG1006	
S713, S714		PSG1006	
OTHERS			
REMOTE SENSOR		SBX1785-51	
<b>ESCUTCHEON BOARD ASSY</b>			
OTHERS			
CN801	3P JUMPER CONNECTOR	52151-0310	
J802	CONNECTOR ASSY (2P)	PDE1250	
<b>JOINT BOARD ASSY</b>			
OTHERS			
CN751, CN752	34P FFC CONNECTOR	9604S-34F	
<b>LED A BOARD ASSY</b>			
SEMICONDUCTORS			
D731-D736		SEL2915A	
RESISTORS			
All Resistors		RD1/6PM□□□J	
<b>LED B BOARD ASSY</b>			
SEMICONDUCTORS			
D737-D742		SEL2915A	
RESISTORS			
All Resistors		RD1/6PM□□□J	



### 3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

#### 3.1 MECHA BOARD ASSY, SENSOR BOARD ASSY, LOADING BOARD ASSY, SELECT MOTOR BOARD ASSY, LOADING MOTOR BOARD ASSY AND MECHANISM BOARD ASSY

##### A NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
Unit: kΩ, MΩ, or Ω unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

4. CAPACITORS:  
Unit: pF or μF unless otherwise noted.  
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
Unit: mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:  
DC voltage (V) in PLAY mode unless otherwise noted:  
mA or - mA:  
DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

7. OTHERS:  
• 0 or 0 : Adjusting point.  
• : Measurement point.  
• The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH-□ ON THE SCHEMATIC DIAGRAM:  
• SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):  
MECHANISM BOARD ASSY  
S610 INSIDE SW

MAIN BOARD ASSY  
S301 TEST MODE

DISPLAY BOARD ASSY  
S703 PAUSE II  
S708 DISC NUMBER -  
S711 ►►►  
S712 STOP ■  
S715 PLAY ►  
S716 DISC NUMBER +

SWITCHBOARD ASSY  
S701 RANDOM  
S702 POWER STANDBY/ON  
S709 MODE  
S710 CLEAR  
S713 ADLC  
S714 TIME

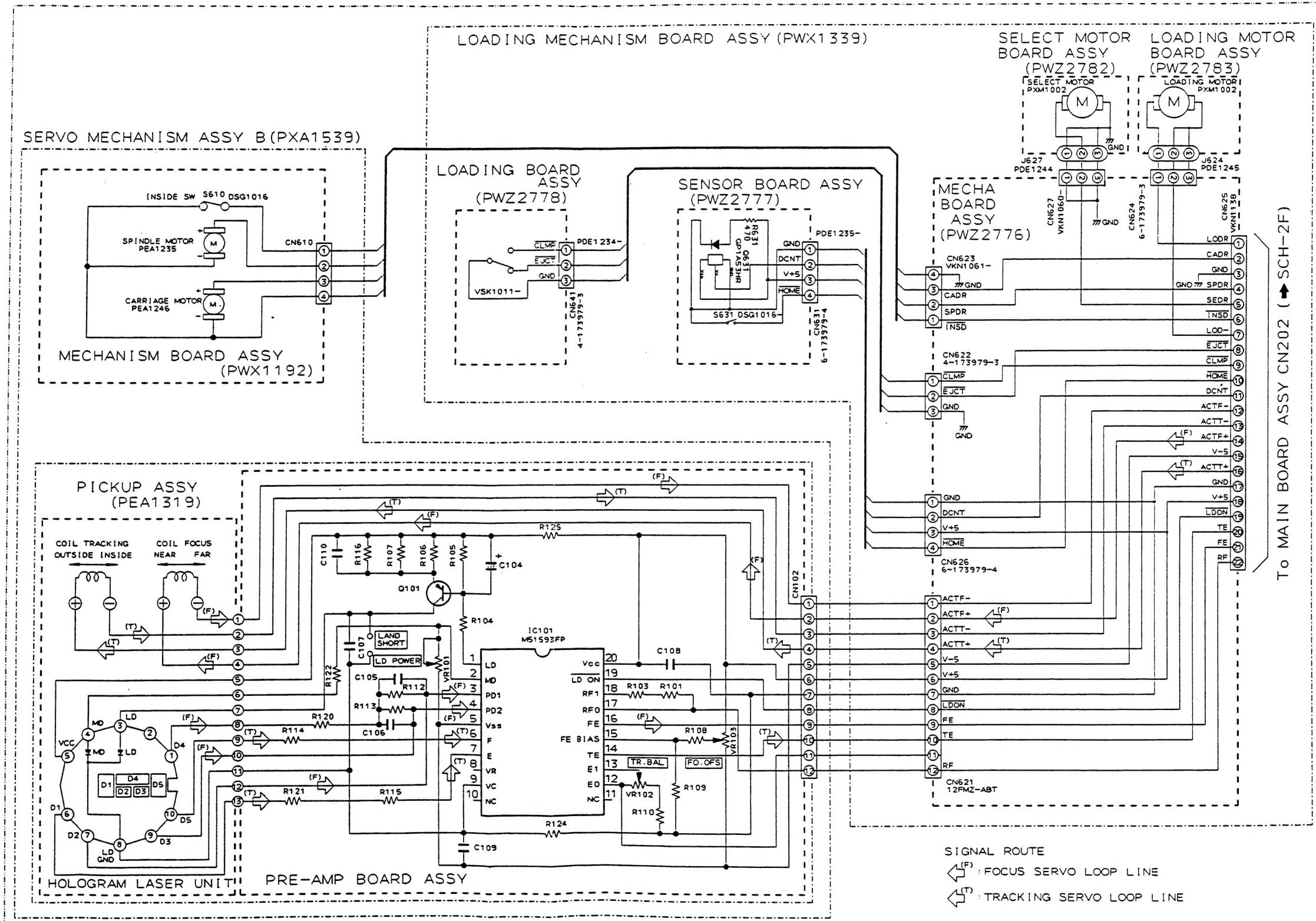
SENSOR BOARD ASSY  
S631 HOME

RACK BOARD A ASSY  
S651 EJECT  
S652 EJECT

RACK BOARD B ASSY  
S653 EJECT  
S654 EJECT

LOADING MECHANISM ASSY (PXA1571)

SCH-1F



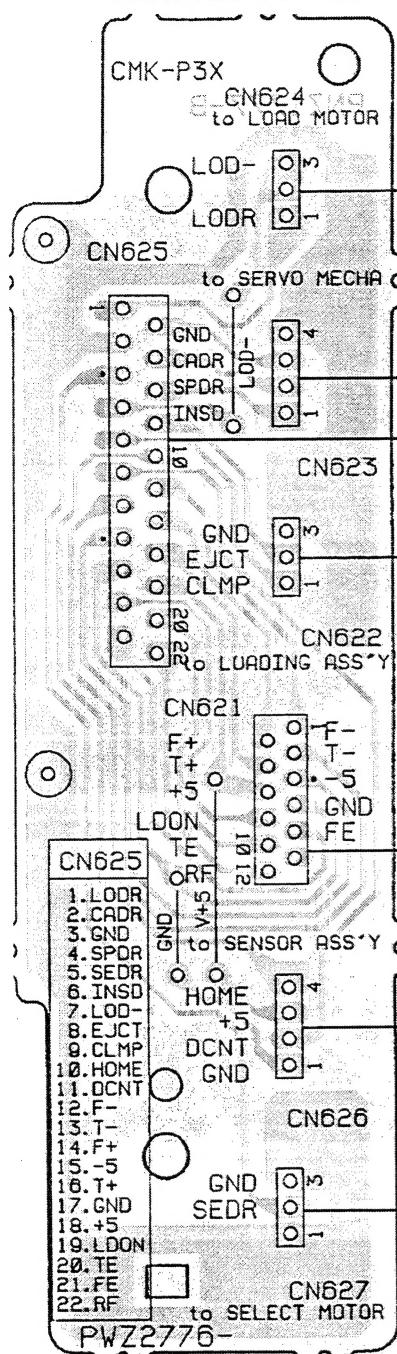
SCH-1F  
1  
2  
3  
4  
5  
6  
7

MECHA BOARD ASSY, SENSOR BOARD ASSY,  
LOADING BOARD ASSY, SELECT MOTOR BOARD  
ASSY, LOADING MOTOR BOARD ASSY,  
MECHANISM BOARD ASSY

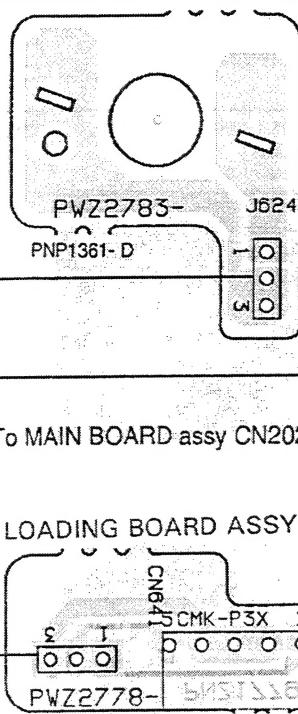
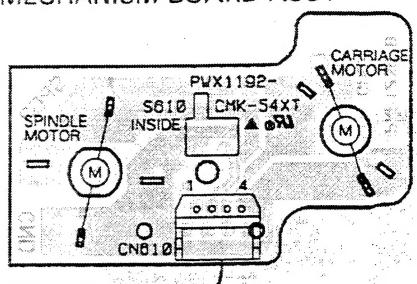
MECHA BOARD ASSY, SENSOR BOARD ASSY,  
LOADING BOARD ASSY, SELECT MOTOR BOARD  
ASSY, LOADING MOTOR BOARD ASSY,  
MECHANISM BOARD ASSY

SCH-1F

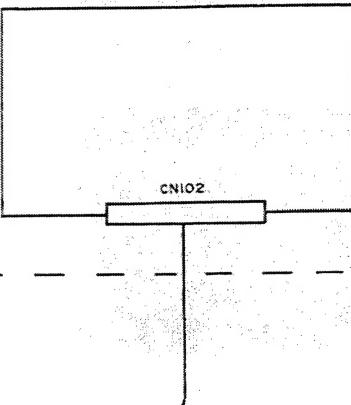
## 1 MECHA BOARD ASSY



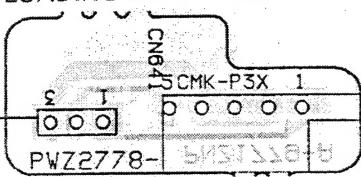
## 2 LOADING MOTOR BOARD ASSY

SERVO MECHANISM ASSY B  
MECHANISM BOARD ASSY

## PICKUP ASSY

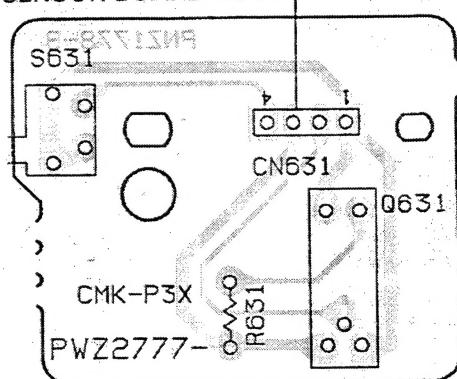


## LOADING BOARD ASSY

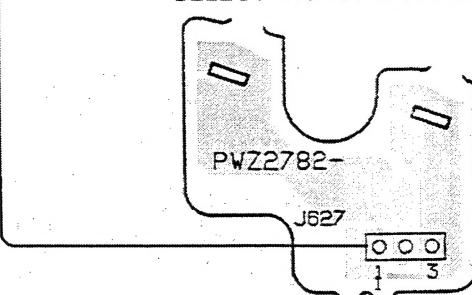


• This diagram is viewed from the mounted parts side.

## SENSOR BOARD ASSY



## SELECT MOTOR BOARD ASSY



## NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

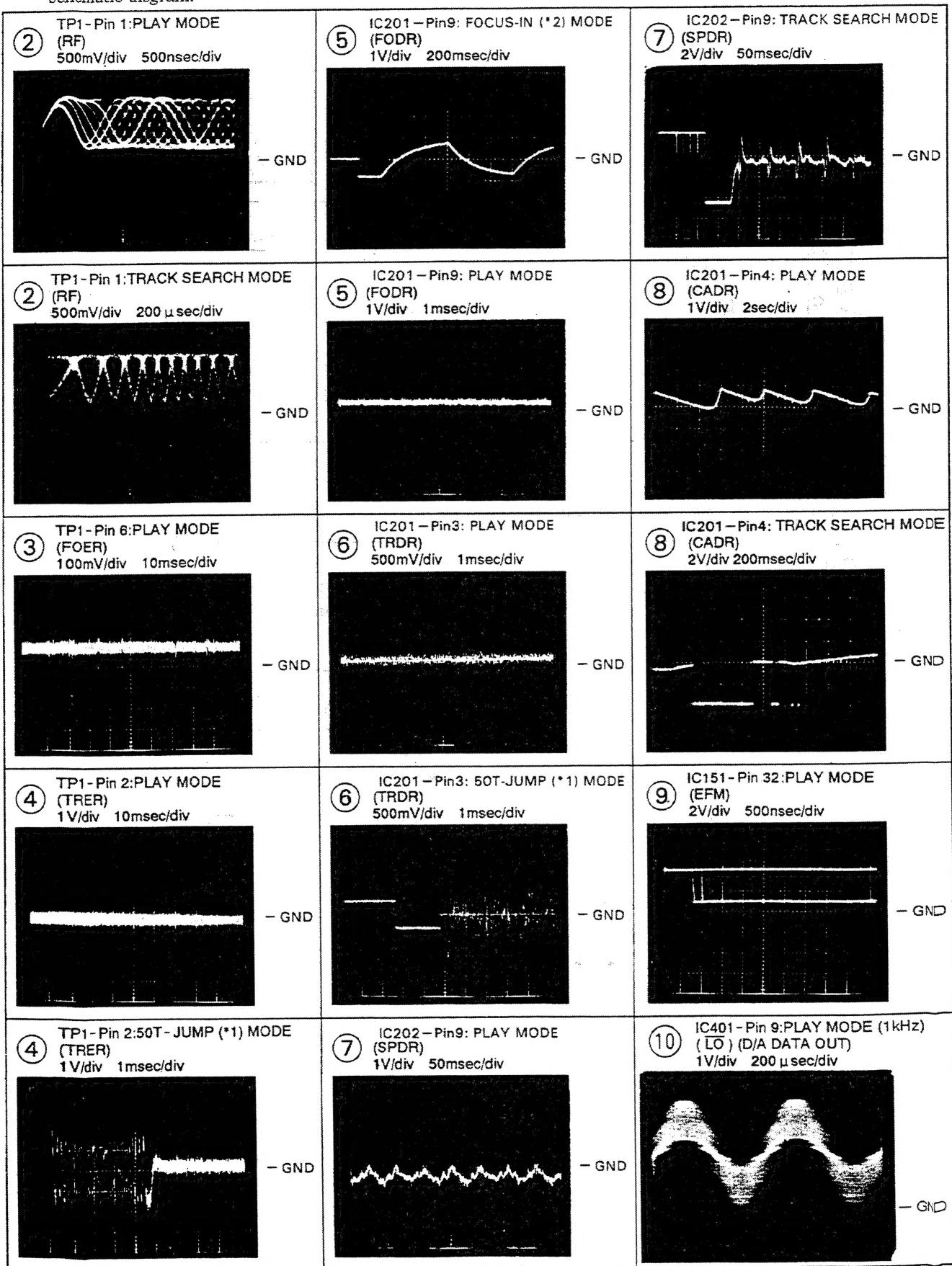
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

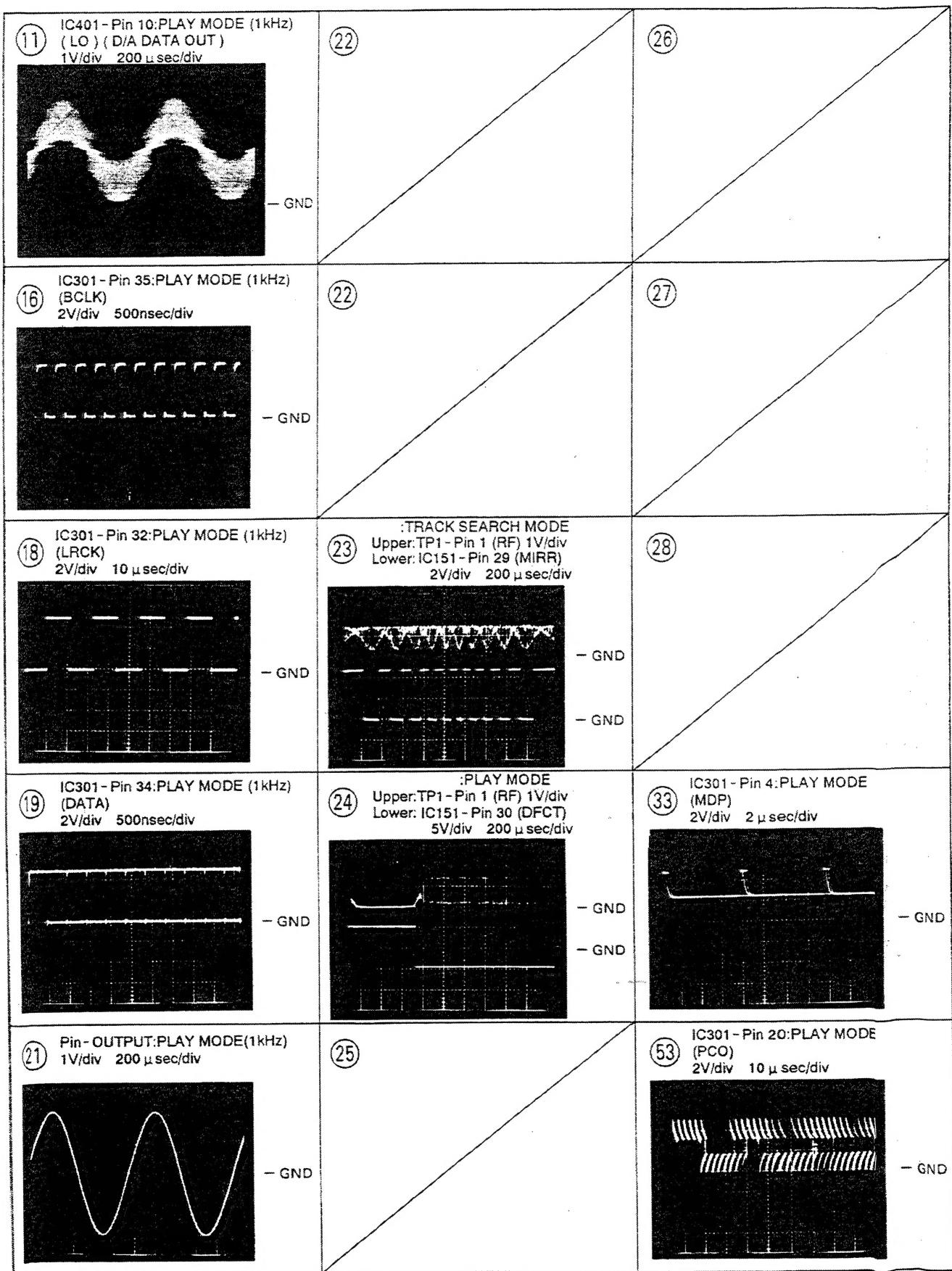
**Waveforms of MAIN BOARD Assy**

Note: The encircled numbers denote measuring point in the schematic diagram.

\*1 50T-JUMP: After switching to the pause mode, press the manual search key.

\*2 FOCUS-IN: Press the key without loading a disc.





**Voltages of MAIN BOARD Assy**

IC501 (PD4607A)

Pin No.	Voltage [V]
1 to 8	5
9	4.4
10	0.5
11	0.1
12	3.2
13, 14	5
15	0
16, 17	5
18 to 23	0
24	4.8
25	0
26	4.8
27	0
28	4.8
29	5
30	0
31	0
32	5
33	0
34, 35	2.3
36 to 38	0
39	4.8
40 to 43	0
44, 45	4.9
46	0
47	5
48 to 51	0
52 to 70	5
71	0
72 to 80	5

IC502 (LH5168N-10L)

Pin No.	Voltage [V]
1 to 5	0
6	4.8
7	0
8	4.8
9	0
10	4.8
11 to 15	0
16	4.8
17 to 19	0
20	4.5
21	0
22	4.9
23 to 25	0
26	4.5
27	4.9
28	4.5

IC503 (PD6162A)

Pin No.	Voltage [V]
1 to 4	5
5	0
6	4.5
7	5
8	2.4
9	2.3
10	4.5
11	5
12, 13	4.9
14	0
15	2
16	1.8
17	3.7
18, 19	0.1
20	0.3
21	5
22	4.4
23	0.5
24	3.2
25 to 27	1.6
28	0

IC351 (PD3316A)

Pin No.	Voltage [V]
1 to 7	0
8	5
9	0
10, 11	2.3
12, 13	5
14 to 18	0
19	5
20 to 23	0
24, 25	5
26	0.3
27	5
28	0
29	5
30, 31	0
32 to 51	-26.7
52 to 55	4.8
56	0
57 to 61	5
62	0
63 to 65	5
66	0
67 to 70	5
71	0
72 to 77	5
78	0
79, 80	5

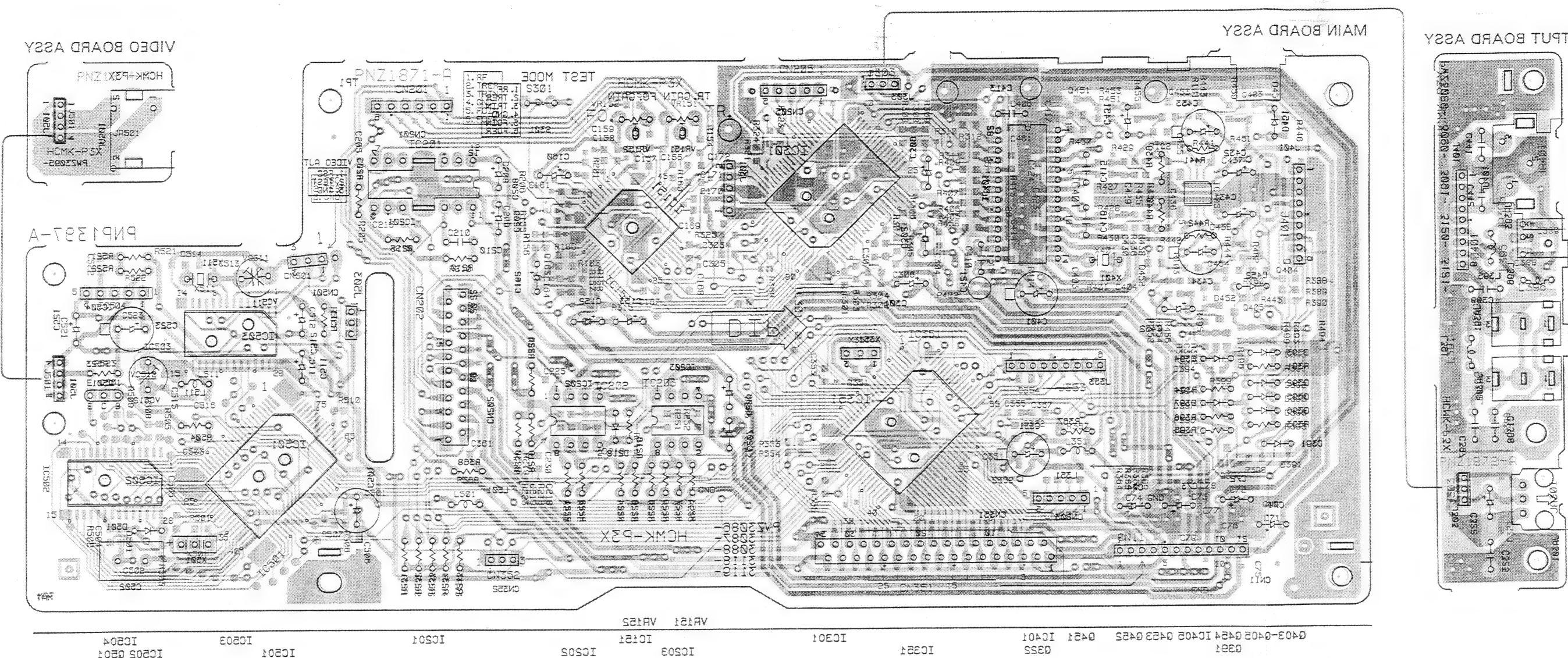
IC504 (MM1031XS)

Pin No.	Voltage [V]
1	1.6
2, 3	0
4	2.1
5	5

Q501

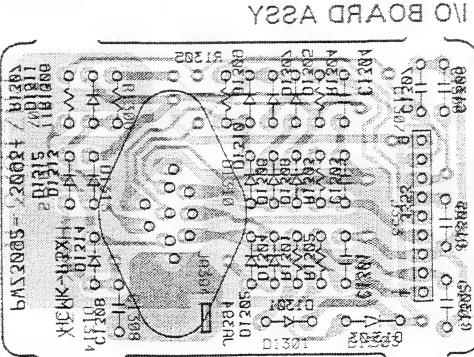
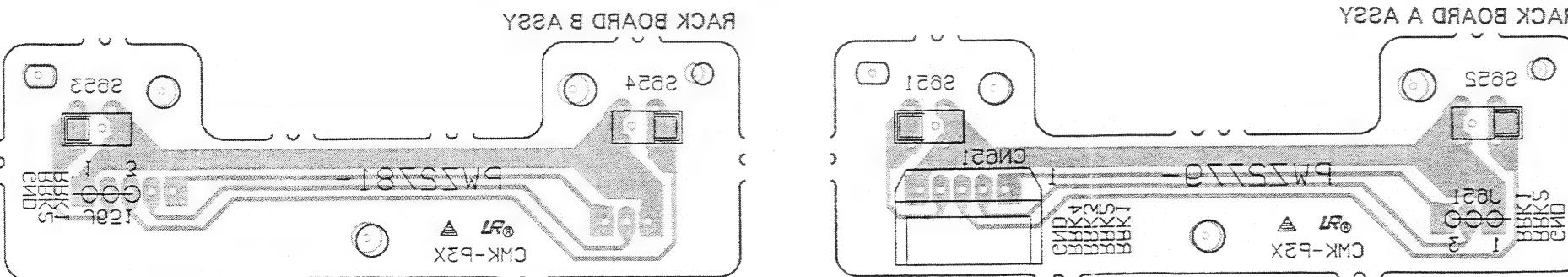
	Voltage [V]
E	4.5
C	5
B	5

3.5 MAIN BOARD ASSY, OUTPUT BOARD ASSY, RACK BOARD A ASSY,  
RACK BOARD B ASSY, VIDEO BOARD ASSY AND I/O BOARD ASSY



- This diagram is viewed from the gray colored foil side.

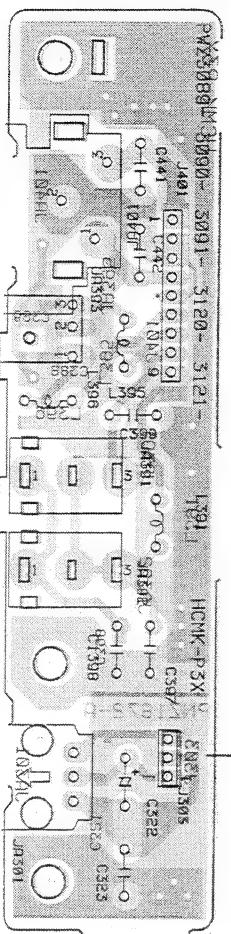
• This PCB is double sided.



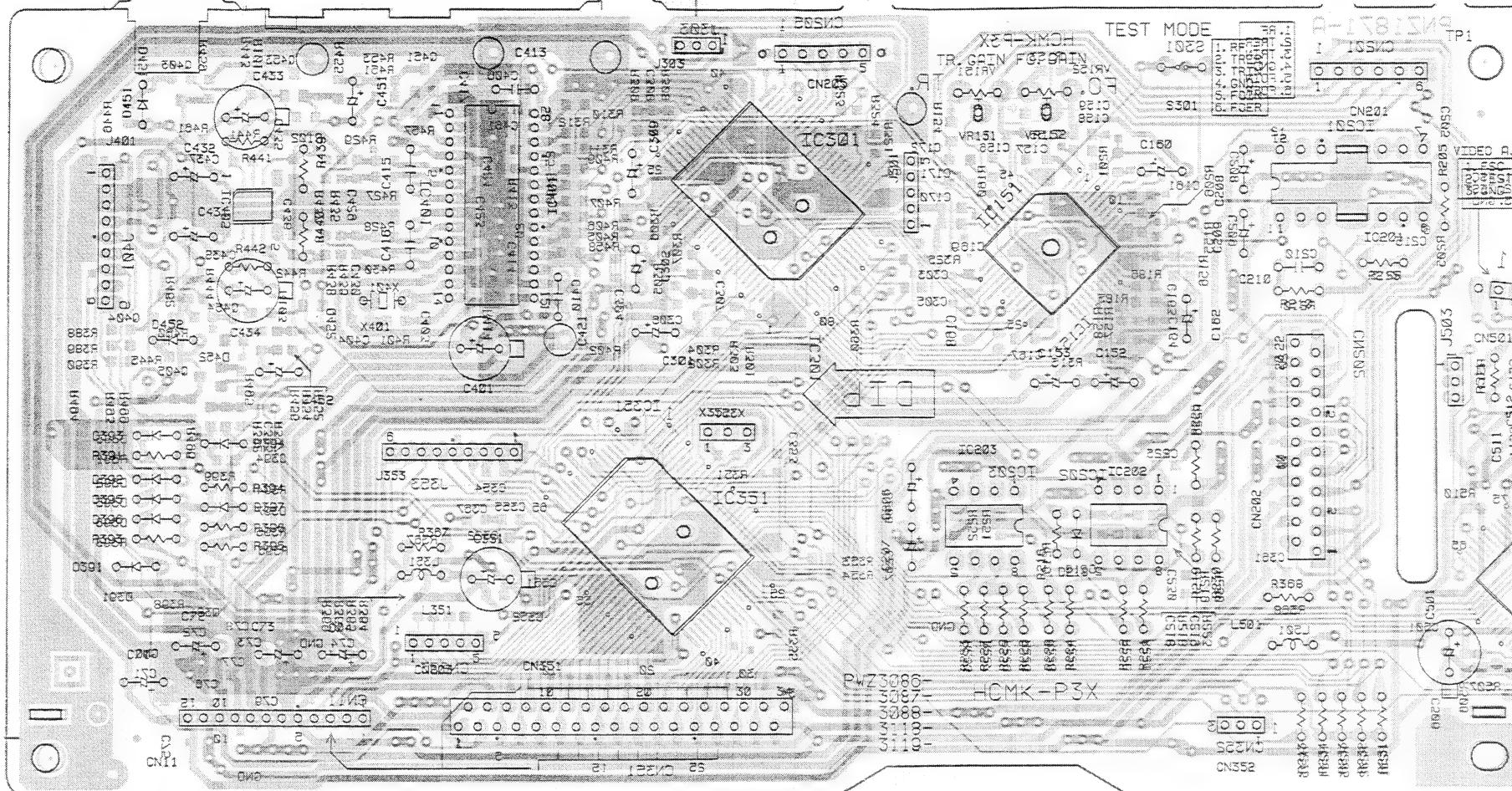
### 3.2 MAIN BOARD ASSY, OUTPUT BOARD ASSY, RACK BOARD A ASSY, RACK BOARD B ASSY, VIDEO BOARD ASSY AND I/O BOARD ASSY

The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.

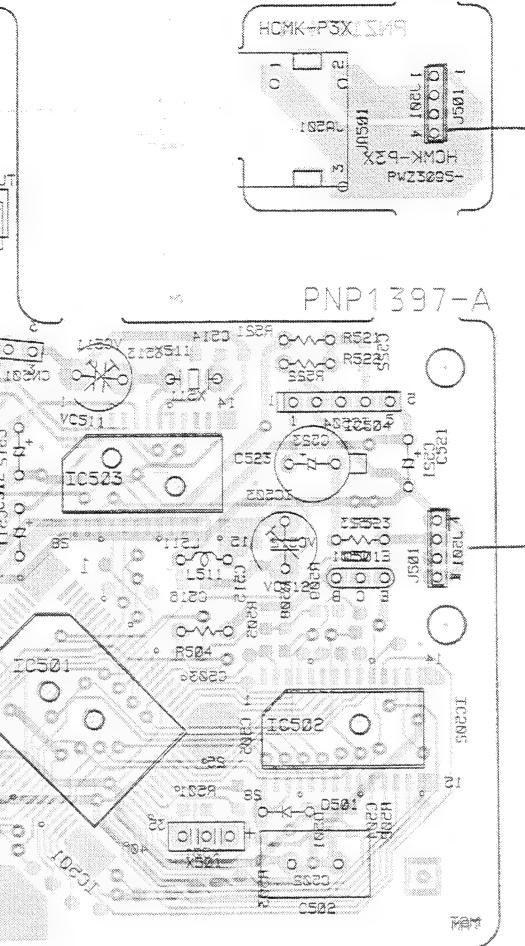
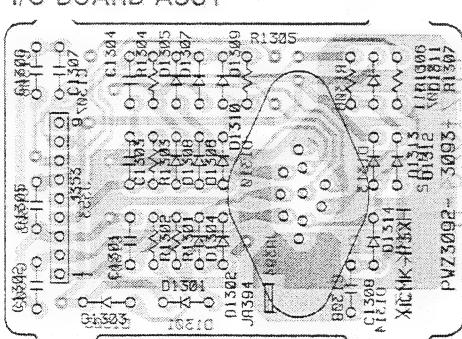
PCB - 2F

A  
OUTPUT BOARD ASSY

MAIN BOARD ASSY



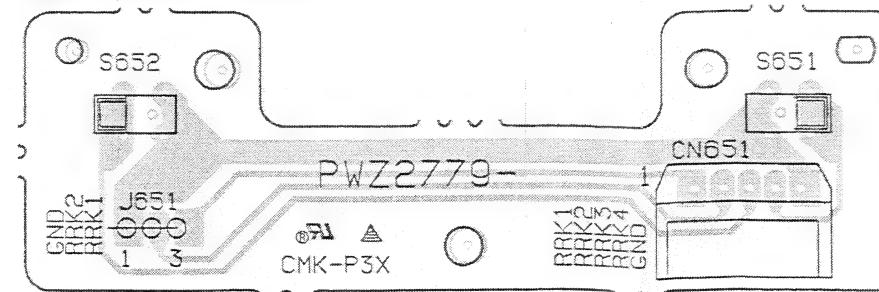
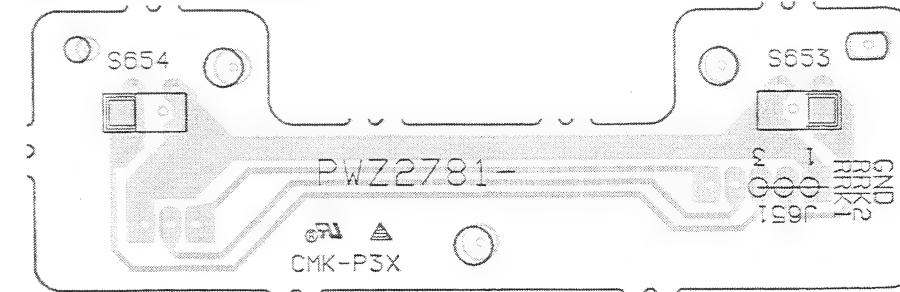
VIDEO BOARD ASSY

C  
I/O BOARD ASSY

- This diagram is viewed from the pink colored foil side.

- This PCB is double sided.

- This diagram is viewed from the mounted parts side.

D  
RACK BOARD A ASSYD  
RACK BOARD B ASSY

A

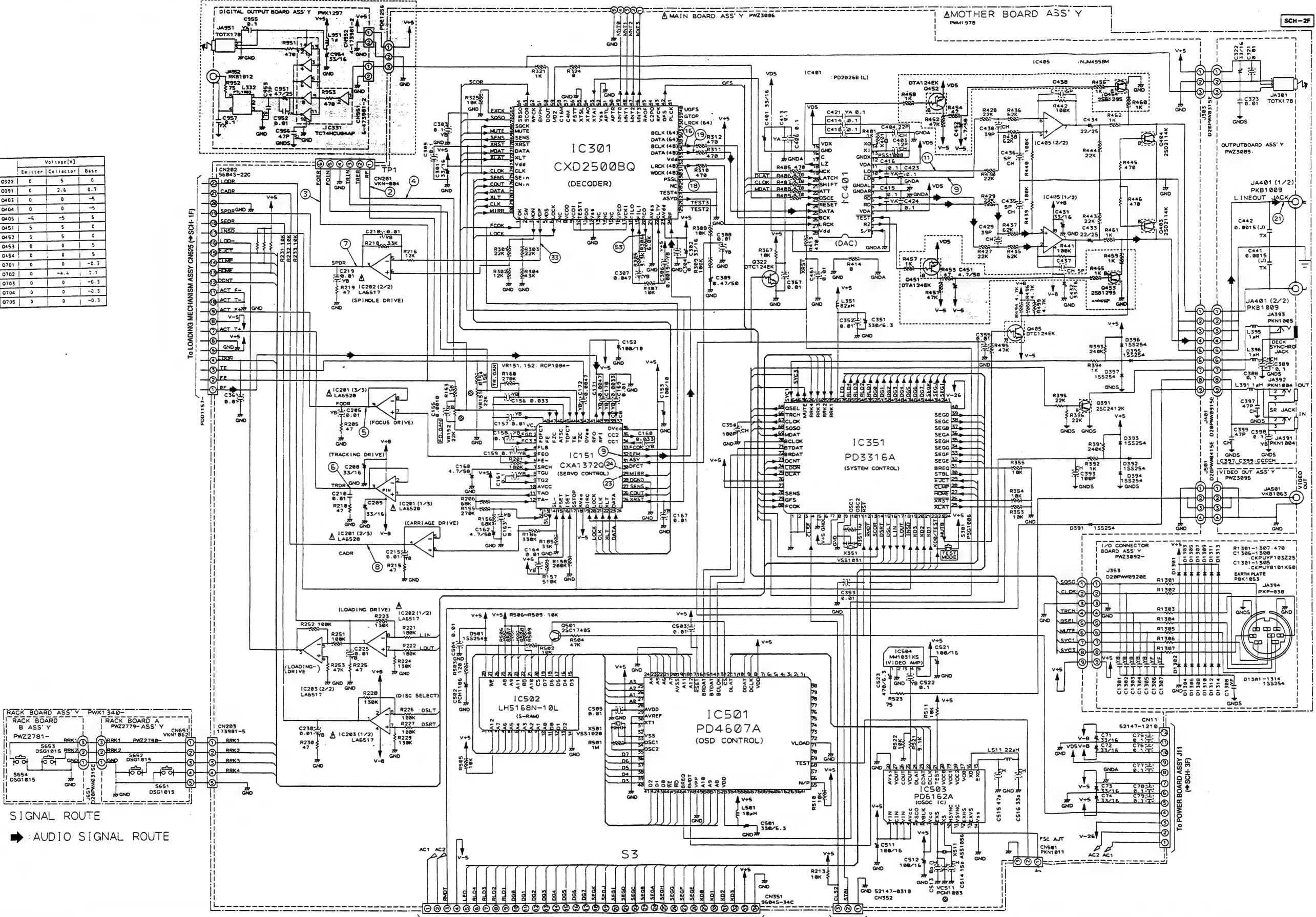
B

C

D

E

NOTE: Section marked with  are not used for PD-F1004/KU/CA



**SCH-2F**

MAIN BOARD ASSY, OUTPUT BOARD ASSY,  
RACK BOARD A ASSY, RACK BOARD B ASSY  
VIDEO BOARD ASSY, I/O BOARD ASSY

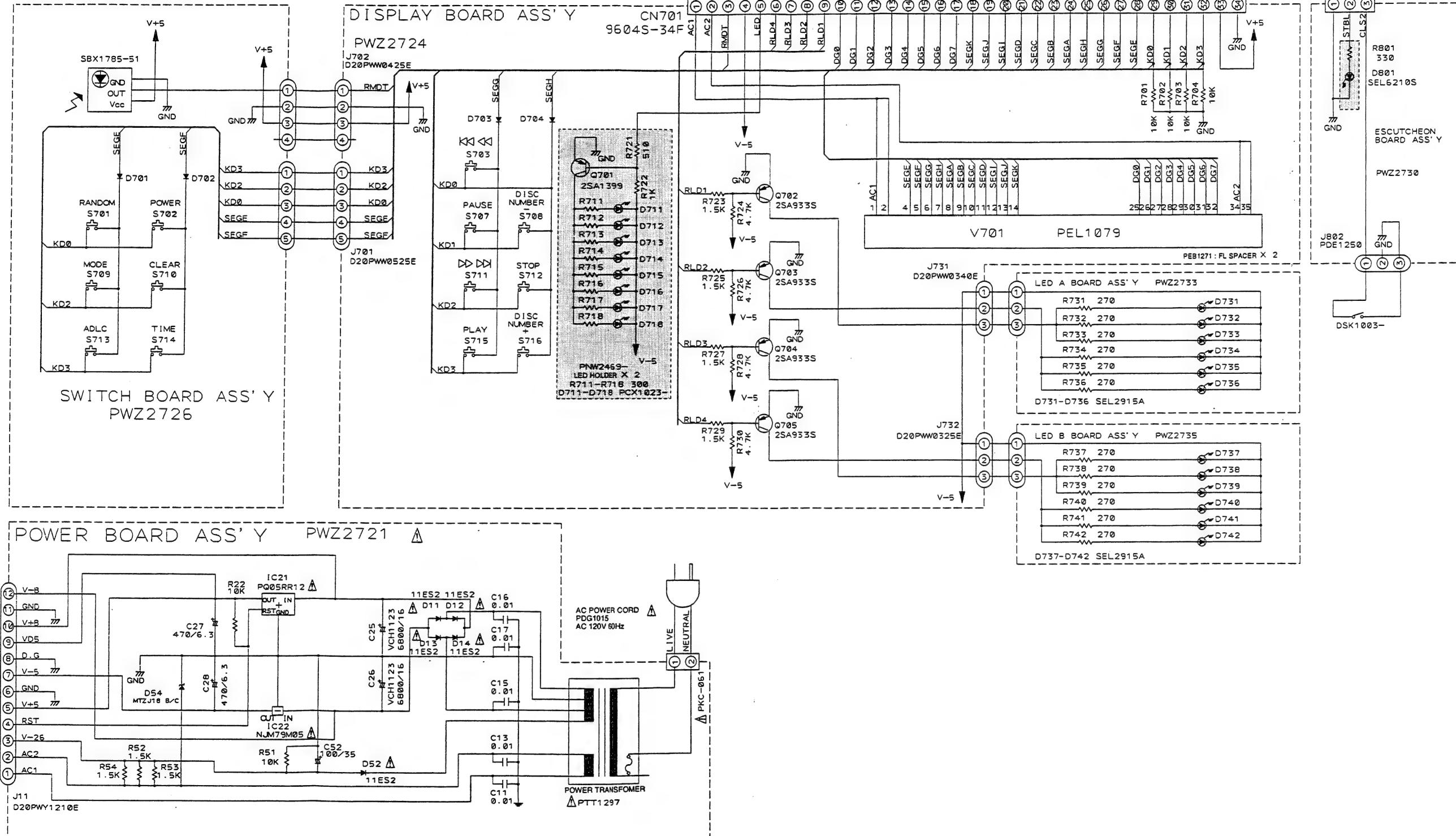
**SCH - 2F**

MAIN BOARD ASSY, OUTPUT BOARD ASSY,  
RACK BOARD A ASSY, RACK BOARD B ASSY,  
VIDEO BOARD ASSY, I/O BOARD ASSY

**3.3 POWER BOARD ASSY, DISPLAY BOARD ASSY, ESCUTCHEON BOARD ASSY, SWITCH BOARD ASSY, JOINT BOARD ASSY, LED A BOARD ASSY AND LED B BOARD ASSY**

NOTE: Section marked with are not used for PD-F1004/KU/CA.

NOTE:  
Any diode without part number indicates 1SS254.  
Any tact sw without part number indicates PSG1006.



POWER BOARD ASSY, DISPLAY BOARD ASSY,  
SWITCH BOARD ASSY, ESCUTCHEON BOARD ASSY,  
JOINT BOARD ASSY, LED A BOARD ASSY,  
LED B BOARD ASSY

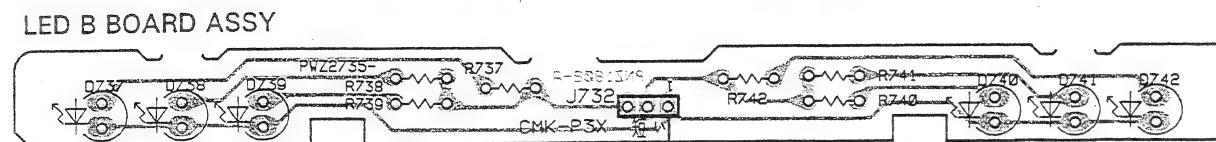
**SCH-3F**

19

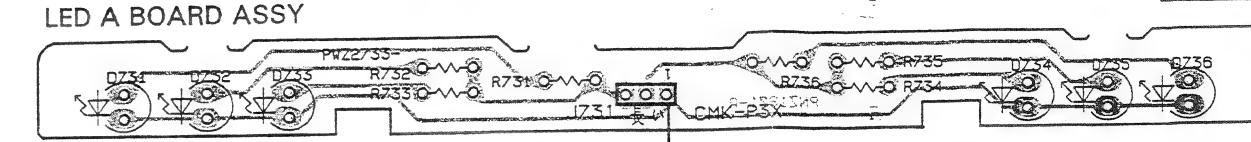
POWER BOARD ASSY, DISPLAY BOARD ASSY,  
SWITCH BOARD ASSY, ESCUTCHEON BOARD ASSY,  
JOINT BOARD ASSY, LED A BOARD ASSY,  
LED B BOARD ASSY

**SCH-3F**

6

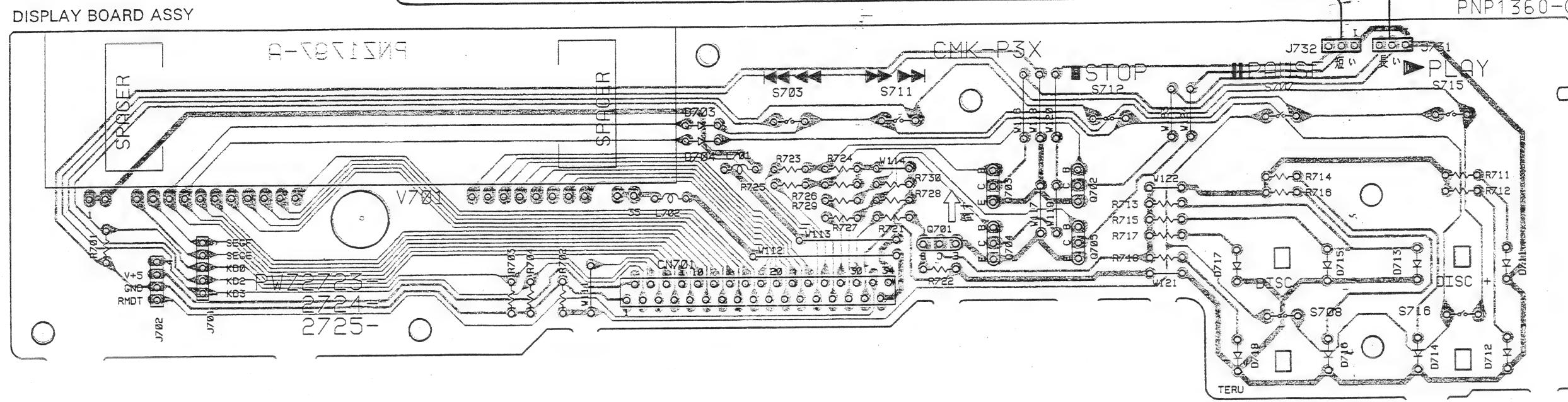


## LED B BOARD ASSY

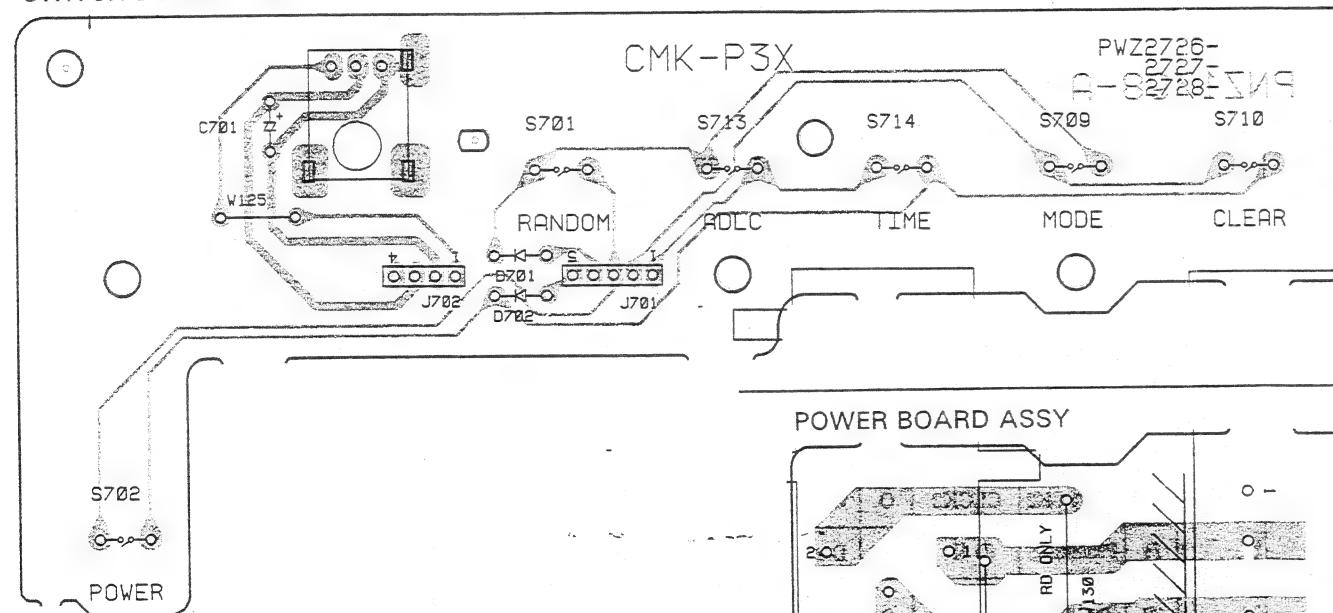


LED A BOARD ASSY

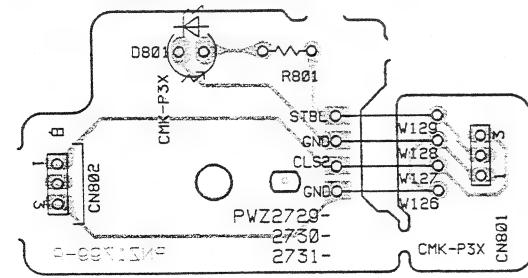
PCB - 31



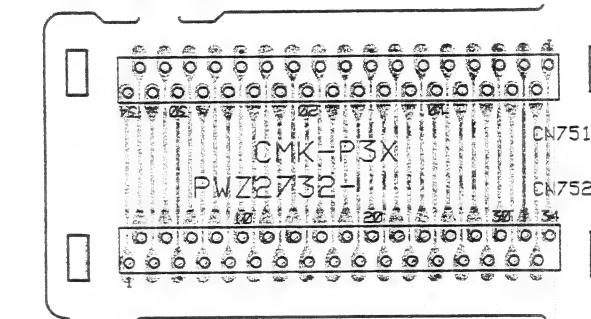
**SWITCH BOARD ASSY**



### **ESCUCHEON BOARD ASSY**

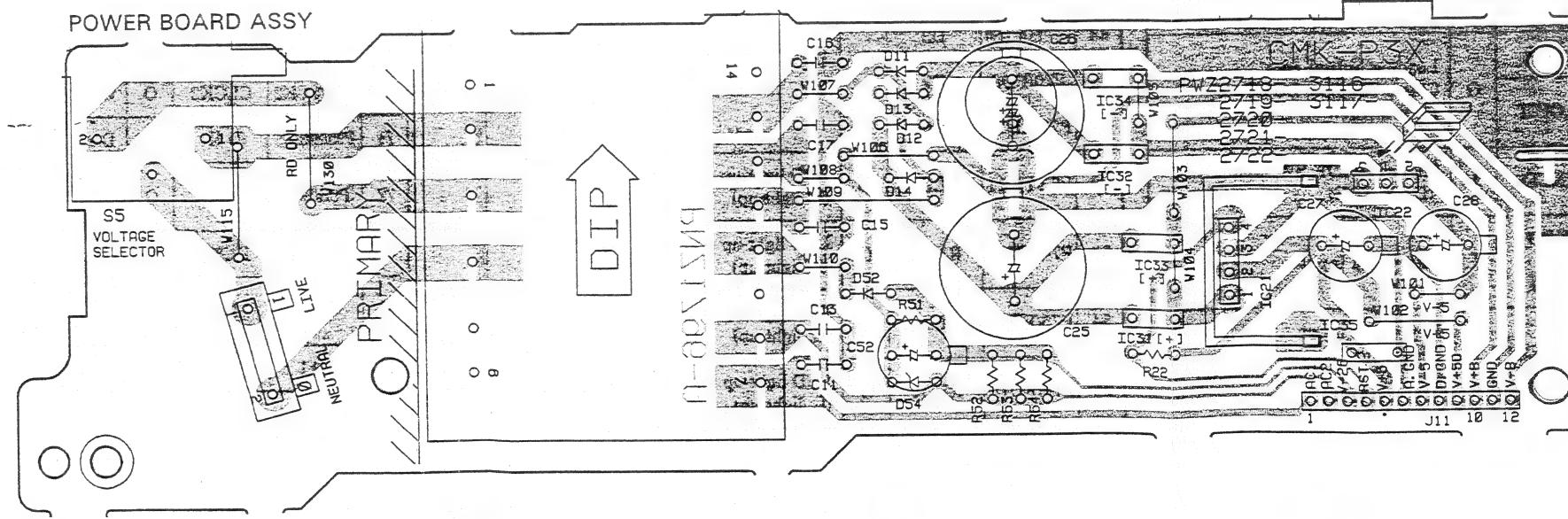


JOINT BOARD ASS



- This diagram is viewed from the mounted parts side.

The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.



## POWER BOARD ASS

十一

## 4. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

### ■ PD3316A (IC351 : MAIN BOARD ASSY)

#### ● System Control IC, CMOS IC SR Input, System Control, Display Data Serial Transmission

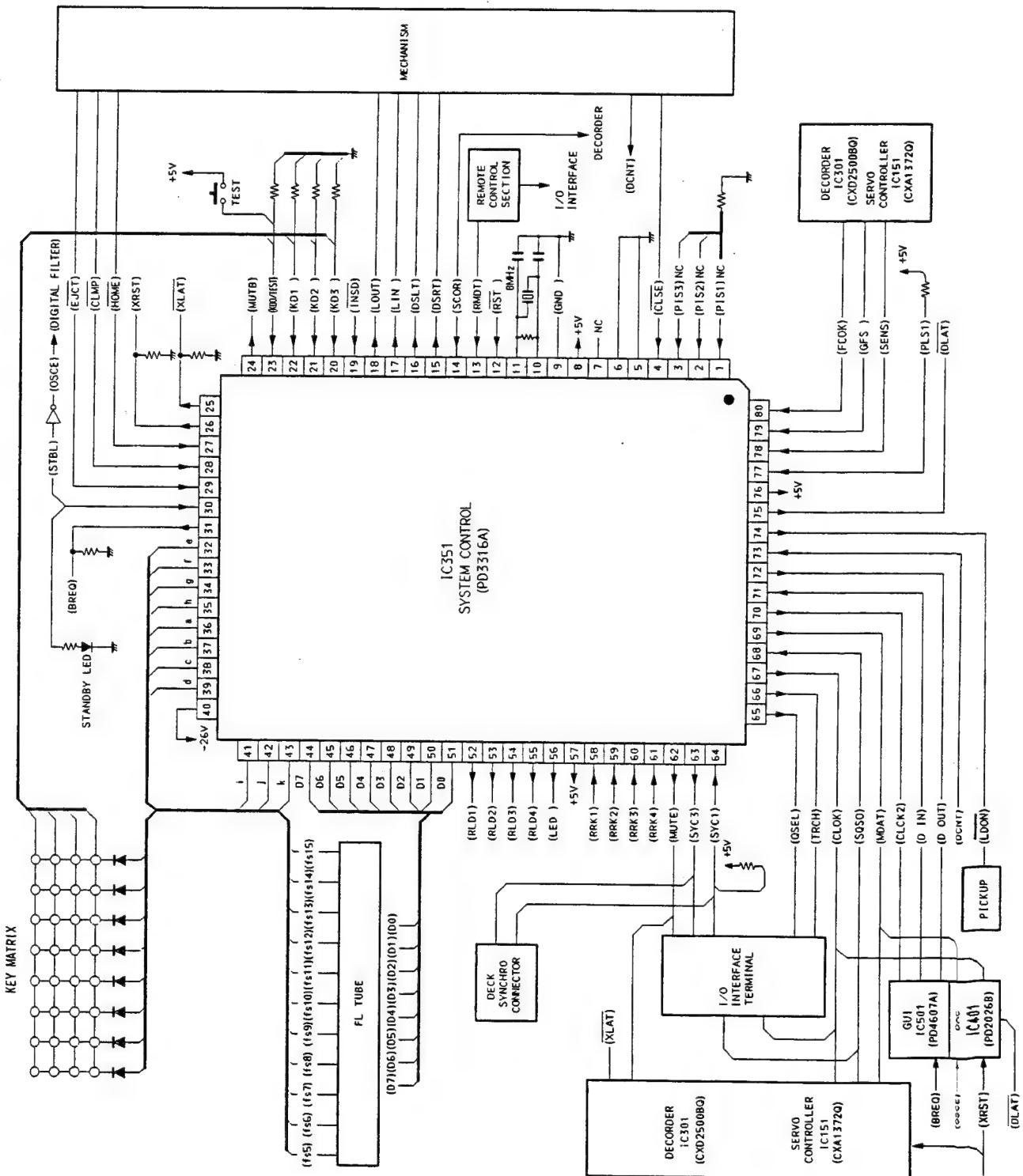
#### ● Pin Function

No.	Symbol	Pin Name	I/O	Description
1	P04/AN4	P1S1	I	Connected to GND. (+1 disc detection input)
3	P06/AN6	P1S3		
4	P07/AN7	CLSE	I	Door close OK SW (L: Close OK)
5	AVss	No use	GND	(Reference voltage for A/D converter): GND
6	TEST	No use	GND	(Test terminal for maker): GND
7	X2	No use	-	(Sub clock oscillator connected terminal): OPEN
8	X1	No use	+5V	(Sub clock oscillator connected terminal): Vcc
9	Vss	Vss	GND	GND
10	OSC1	OSC1	-	Connected to System clock oscillator (8MHz)
11	OSC2	OSC2	-	
12	RES	RST	I	CPU reset (L: Reset)
13	P10/IRQ0	RDMT	I	Remote control data input (For I/O INTERFACE)
14	P11/IRQ1	SCOR	I	Sub code sinc S0+S1 input
15	P12/IRQ2	DRST	O	Selector output port Right direction (DRST: H, DS LT: L) Left direction (DRST: L, DS LT: H)
16	P13/IRQ3	DSLT	O	
17	P14/IRQ4	LIN	O	Loading output port Clump (LIN: L, LOUT: H) Return (LIN: H, LOUT: L)
18	P15/IRQ5 /TMOE	LOUT	O	
19	P16/EVENT	INSD	I	Slider INSIDE SW input (L: INSIDE)
20	P33/FS27	KD3	I	
22	P31/FS25	KD1	I	Key • data input
23	P30/FS24	KD0/TEST	I	Key • data input TEST mode request input (H: TEST, L: Normal mode)

No.	Symbol	Pin Name	I/O	Description
24	P47/FS23	MUTB	O	Muting output (L: MUTE)
25	P46/FS22	XLAT	O	LSI control data ratch pulset
26	P45/FS21	XRST	O	Reset output for each LSI
27	P44/FS20	HOME	I	Disc selector home SW (L: Home)
28	P43/FS19	CLMP	I	Clump SW (L: Clump OK)
29	P42/FS18	EJCT	I	Loading out SW (L: Loading out OK)
30	P41/FS17	STBL	O	Stand-by LED light-up output (H: Light-up, OSCE output)
31	P40/FS16	BREQ	O	Request port for sub micro-computer (H: transmission)
32	P50/FS15	SEG E	O	Segment output for FL drive
35	P53/FS12	SEG H		
36	P54/FS11	SEG A	O	Segment output for FL drive
39	P57/FS8	SEG D		
40	P17/Vdisp	Vdisp	I	-26V
41	P60/FD0/FS7	SEG I	O	Segment output for FL drive
43	P62/FD2/FS5	SEG K		
44	P63/FD3/FS4	D7	O	Digit output for FL drive
48	P67/FD7/FS0	D3		
49	P70/FD8	D2	O	Digit output for FL drive
51	P72/FD10	D0		
52	P73/FD11	RLD1	O	LED light-up output for Rack1 (L: light-up)
53	P74/FD12	RLD2	O	LED light-up output for Rack2 (L: light-up)
54	P75/FD13	RLD3	O	LED light-up output for Rack3 (L: light-up)
55	P76/FD14	RLD4	O	LED light-up output for Rack4 (L: light-up)

No.	Symbol	Pin Name	I/O	Description
56	P77/FD15	LED	O	Output for LED light-up
57	Vcc	Vcc	-	+5V
58	P80	RRK1	I	Rack1 Yes/No SW (L: No)
59	P81	RRK2	I	Rack2 Yes/No SW (L: No)
60	P82	RRK3	I	Rack3 Yes/No SW (L: No)
61	P83	RRK4	I	Rack4 Yes/No SW (L: No)
62	P84	MUTE	O	Muting OUTPUT (H: MUTE) (For I/O INTERFACE)
63	P85	SYC3	O	DECK SYNCHRO signal output (For I/O INTERFACE)
64	P86	SYC1	I	DECK SYNCHRO signal input (For I/O INTERFACE)
65	P87	QSEL	O	Signal output for QDATA discrimination (H: During output of Q DATA) (For I/O INTERFACE)
66	P90/PWM	TRCH	O	Data serial output (For I/O INTERFACE)
67	P91/SCK1	CLOK	O	LSI serial clock output (For I/O INTERFACE)
68	P92/SI1	SQSO	I	Sub code Q data serial input (For I/O INTERFACE)
69	P93/SO1	MDAT	O	LSI control data serial output
70	P94/SCK2	CLK2	O	Clock for sub micro-computer
71	P95/SI2/CS	D IN	I	Data input for sub micro-computer
72	P96/SO2	D OUT	O	Data output for sub micro-computer
73	P97/UD	DCNT	I	Disc count pulse input
74	PA0	LDON	O	Laser diode output (L: ON, H: OFF)
75	PA1	DLAT	O	DAC control data ratch pulse

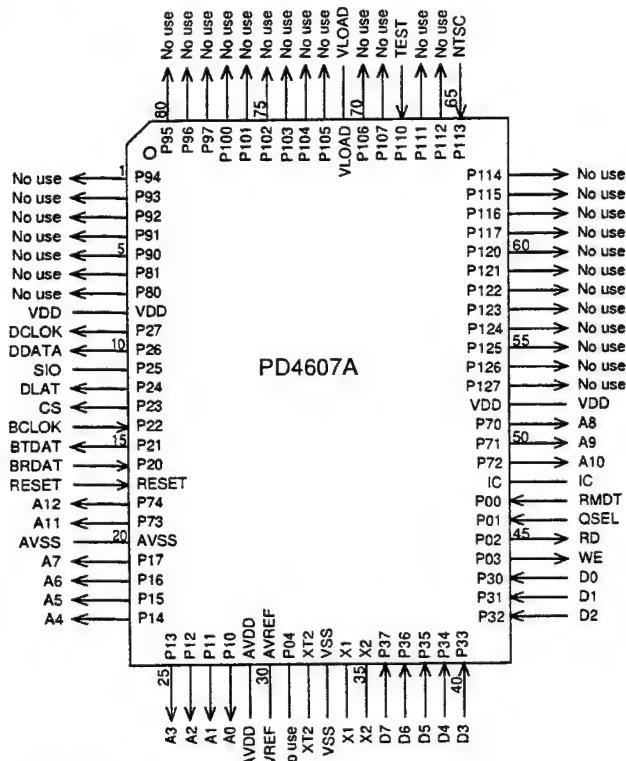
- Block Diagram



## ■ PD4607A (IC501 : MAIN BOARD ASSY)

### ● GUI Screen Control IC, CMOS

### ● Pin Assignment (Top View)

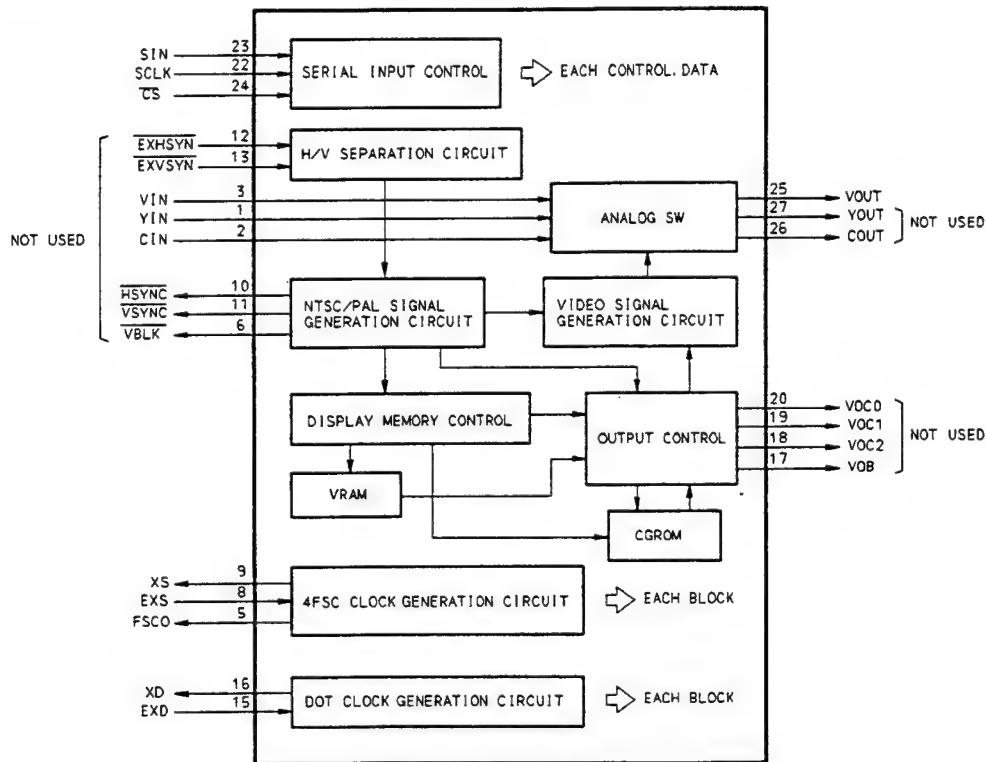


No.	Symbol	Pin Name	I/O	Description
1   5	P94/FIP6   P90/FIP2	No use	O	Open
6	P81/FIP1	No use	O	Open
7	P80/FIP0		O	Open
8	VDD	VDD	+5V	+5V
9	P27/SCK0	DCLOK	O	Serial clock output
10	P26/S00/SB1	DDAT	O	Data output to graphics IC
11	P25/SI0/SB0	SIO	I	Three line type data communication use
12	P24/BUSY	DLAT	O	Latch output (L: Latch)
13	P23/STB	CS	O	Chip select (H: Stand-by)
14	P22/SCK1	BCLOK	I	Serial clock input
15	P21/SO1	BTDAT	O	Data output to Bank CD
16	P20/SI1	BRDAT	I	Data input from Bank CD
17	RESET	RESET	I	CPU reset
18	P74	A12	O	Address line to external RAM
19	P73	A11		
20	AVSS	AVSS	GND	GND
21   28	P16/ANI7   P10/ANI0	A7 A0	O	Address line to external RAM
29	AVDD	AVDD	+5V	+5V
30	AVREF	AVREF	GND	GND
31	P04/XT1	No use	I	GND
32	XT2	XT2	-	Open
33	VSS	VSS	GND	GND
34	X1	X1		Connected to system clock oscillator (4.19MHz)
35	X2	X2		
36	P37	D7		
37	P36/BUZ	D6		
38	P35/PCL	D5		
39	P34/T12	D4		
40	P33/T11	D3		
41   43	P32/TO2   P30/TO0	D2 D0		
44	P03/INTP3/C10	WE	O	External RAM data write (L: Data write)
45	P02/INTP2	RD	O	External RAM data read (L: Data read)
46	P01/INTP1	QSEL	I	Bank CD information data transmission request (H: transmission request)
47	P00/INTP0/TI0	RMDT	I	Remote control data input

No.	Symbol	Pin Name	I/O	Description
48	IC	IC	GND	GND
49   51	P72   P70	A10   A8	O	Address line to external RAM
52	VDD	VDD	+5V	+5V
53   60	P127/FIP33   P120/FIP26	No use	O	Open
61   64	P117/FIP25   P114/FIP22			
65	P113/FIP21	NTSC	I	Switching NTSC/PAL (H: NTSC, L: PAL)
66	P112/FIP20	No use	O	Open
67	P111/FIP19			
68	P110/FIP18	TEST	I	Test mode information (Graphics IC) (L: Test)
69	P107/FIP17	No use	O	Open
70	P106/FIP16			
71	VLOAD	VLOAD	GND	GND
72   77	P105/FIP15   P101/FIP10	No use	O	Open
78   80	P97/FIP9   P95/FIP7			

## ■ PD6162A (IC503 : MAIN BOARD ASSY)

- GUI Character IC
- Block Diagram



### ● Pin Function

No.	Pin Name	I/O	Description
1	YIN	I	Not used Luminance signal input terminal at the time of superimpose display. A DC playback (DC clamped) 2 Vp-p (sync chip level 1 V, pedestal level 1.57 V) signal is given as input.
2	CIN	I	Not used Saturation signal input terminal at the time of superimpose display. A signal with a DC voltage of 1.57 V and a color burst signal amplitude of 0.57 Vp-p is given as input.
3	VIN	I	Not used Composite video signal input terminal at the time of superimpose display. A DC playback (DC clamped) 2 Vp-p (sync chip level 1 V, pedestal level 1.57 V) signal is given as input.
4	AVcc	-	Analog power supply terminal. Same potential as for the Vcc terminal.
5	FSCO	O	This signal indicates the internal color burst phase. Superimpose color display can be executed by controlling the EXS terminal input clock so that the phase of this signal and the color burst phase of the external video signal become the same at the time of external sync control operation. Output control is executed with the FO bit of command 7.
6	VBLK	O	Not used Vertical blanking period signal output terminal. Low-level output is executed during the vertical blanking period.
7	Vcc	-	Power supply terminal.

No.	Pin Name	I/O	Description
8	EXS	I	External circuit terminals of the color burst clock generator. A crystal oscillator circuit is formed by external connection of a crystal oscillator (NTSC: 14.31818 MHz, PAL: 17.734475 MHz) and a load capacitance (C).
9	XS	O	
10	H <sub>SYNC</sub>	O	Not used Horizontal sync signal output terminal. Also used as composite sync signal output terminal. By low level for the TEST terminal, the color burst oscillation clock divided by four (fsc) is put out.
11	V <sub>SYNC</sub>	O	Not used Vertical sync signal output terminal. By low level for the TEST terminal, the oscillation clock for the dot clock is put out.
12	EXH <sub>SYN</sub>	I	Not used External horizontal sync signal input terminal. Also used as composite sync signal output terminal. This is a hysteresis input with internal pull-up.
13	EXV <sub>SYN</sub>	I	Not used External vertical sync signal input terminal. This is a hysteresis input with internal pull-up.
14	V <sub>ss</sub>	-	Ground terminal
15	EXD	I	External circuit terminals for the display dot clock generator. An LC oscillation circuit is formed by external connection of L and C.
16	XD	O	
17	V <sub>OB</sub>	O	Not used Character + background period signal output terminal. At the time of internal sync control operation, all output periods for characters, character background, line background, and screen background are shown. At the time of external sync control operation, the output periods for characters, character background, and line background are shown.
18	VOC2	O	
19	VOC1		Not used Color signal output terminals. Character color, character background color, line background color, and screen background color are put out.
20	VOC0		
21	TEST	I	Test signal input terminal. Normally high level (fixed) is given as input. (Do not issue a command in case of input of low level.)
22	SCLK	I	Shift clock input terminal for serial transfer. This is a hysteresis input with internal pull-up.
23	SIN	I	Serial data input terminal. This is a hysteresis input with internal pull-up.
24	C <sub>S</sub>	I	Chip select terminal. This is set to low level for serial transfer. Also used for cancellation of power-on reset. This is a hysteresis input with internal pull-up.
25	V <sub>OUT</sub>	O	Composite video signal output terminal. A 2 V <sub>p-p</sub> (sync chip level 1 V, pedestal level 1.57 V) signal is put out.
26	C <sub>OUT</sub>	O	Not used Saturation signal output terminal. A signal with a DC voltage of 1.57 V and a color burst signal amplitude of 0.57 V <sub>p-p</sub> is put out.
27	Y <sub>OUT</sub>	O	Not used Luminance signal output terminal. A 2 V <sub>p-p</sub> (sync chip level 1 V, pedestal level 1.57 V) signal is put out.
28	A <sub>VSS</sub>	-	Analog ground terminal. Same potential as V <sub>ss</sub> .

## 5. ADJUSTMENTS

Note: Adjustment of PD-F1004/KU/CA is the same as that of PD-F904/KU/CA except for the following:

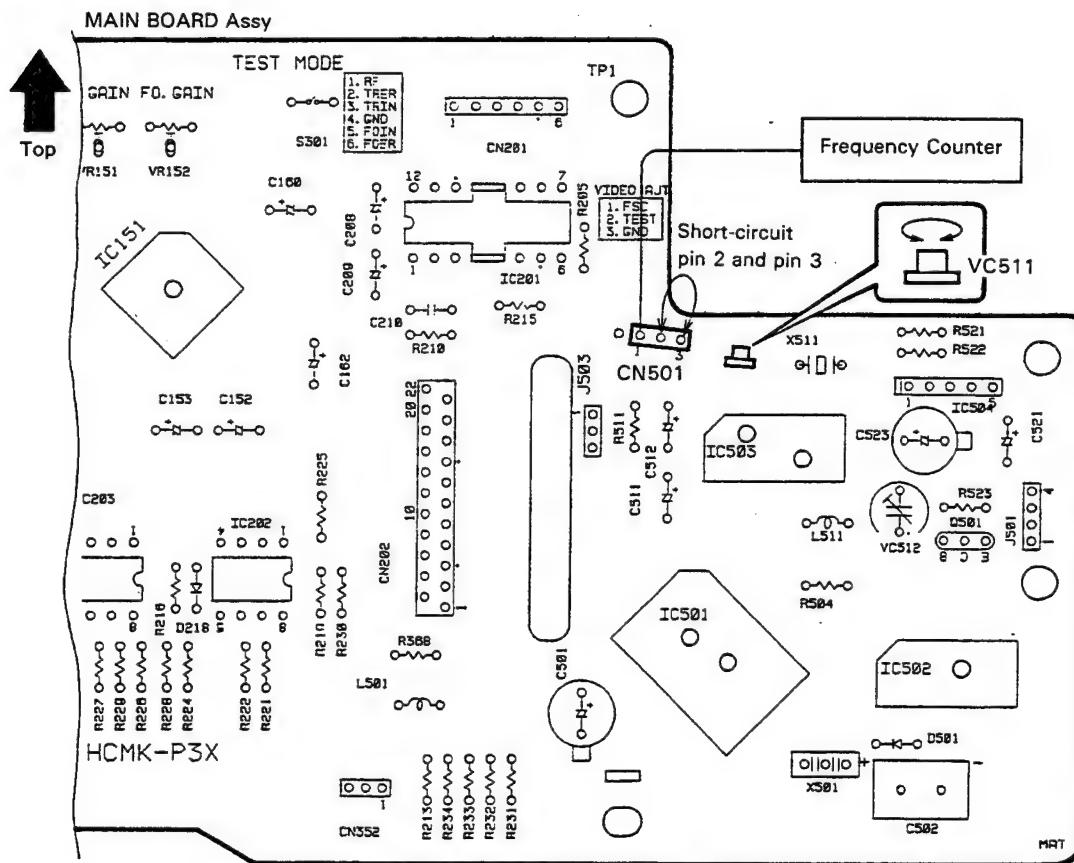
### ■ CHROMA FREQUENCY ADJUSTMENT

Symptom when out of adjustment:

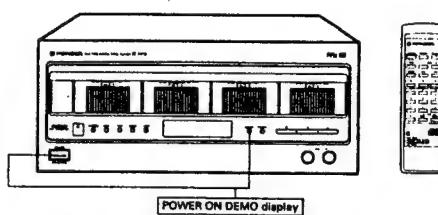
The TV picture is not in color (Black-and-white picture).

#### Procedure

1. Short-circuit pin 2 and pin 3 of connector CN501 of the MAIN BOARD assy.
2. Connect a frequency counter to pin 1 of CN501.  
Adjust VC511 so that the frequency is within 3.579545 MHz  $\pm$  5 Hz.



# Service Manual



ORDER NO.  
**RRV1225**

## FILE-TYPE COMPACT DISC PLAYER **PD-F904**

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	PD-F904		
KU/CA	○	AC120V	

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**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
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4463

## 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

### WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

### NOTICE

#### (FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

### REMARQUE

#### (POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

#### (FOR USA MODEL ONLY)

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

#### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

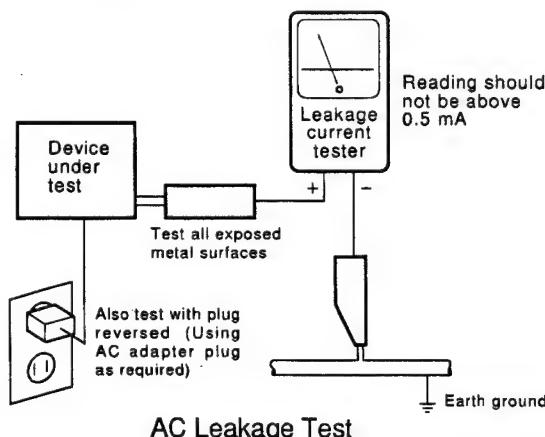
### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.



## 2. SPECIFICATIONS

### 1. General

Type .....	Compact disc digital audio system
Power requirements .....	AC 120 V, 60 Hz
Power consumption .....	12 W
Operating temperature .....	+5°C - +35°C (+41°F - +95°F)
Weight .....	11.0 kg (24 lb 4 oz)
External dimensions .....	420(W) X 399(D) X 190(H) mm 16-9/16(W) X 15-11/16(D) X 7-1/2(H) in

### 2. Audio section

Frequency response .....	2 Hz - 20 kHz
S/N ratio .....	98 dB or more (EIAJ)
Dynamic range .....	96 dB or more (EIAJ)
Channel separation .....	96 dB or more (EIAJ)
Harmonic distortion .....	0.003 % or less (EIAJ)
Level difference between channels .....	1.0 dB or less (EIAJ)
Output voltage .....	2 ± 0.3 Vrms (EIAJ)
Wow and flutter .....	less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels .....	2-channel (stereo)

### 3. Output terminal

Audio line output	
Control input/output jacks	
CD-DECK SYNCHRO jack	
I/O INTERFACE	

### 4. Functions

Number of discs to be stored - maximum 100.

#### Basic Operation Buttons

- PLAY, PAUSE, STOP

#### Playback mode

- All Playback Mode
- Single Playback Mode
- Custom Playback Mode

#### Search Function

- Disc Search
- Track Search
- Manual Search

#### Programming

- Maximum 32 steps
- Pause
- Program Clear (single track or all tracks)

#### Repeat Functions

- 1 Track Repeat
- Single Repeat
- All Discs Repeat
- Program Repeat
- Single Random Repeat
- All Discs Random Repeat
- Custom Random Repeat
- Custom Repeat

#### Random Play

- Random Play (repeat also available)

#### Switching Display

Disc/Track Number, Time Consumed (track/disc), and Total Time

#### ADLC

Automatic Digital Level Controller

#### Memory Hold

Stored Playback Mode, Program Contents, or Custom Mode

#### Last Disc Memory

Direct Search with the Digit buttons (remote control unit)

#### Power On/Off (remote control unit)

#### CD-DECK SYNCHRO jack

#### Remote Control jack

### 5. Display

#### FL Tube Display

- ► indicator
- ■ indicator
- Playback Mode indicators (all, single, custom)
- Elapsed Time Display (min, sec)
- Total Time Display
- Disc Number, Track Number
- Program Step Number
- Custom Number
- Repeat indicator
- Random indicator
- Program indicator
- ADLC indicator

### 6. Accessories

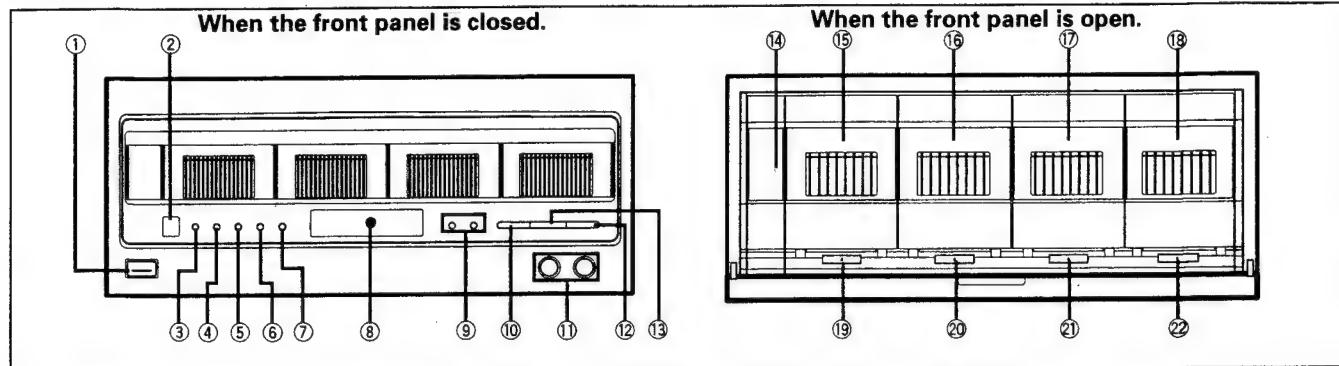
● Remote control unit .....	1
● AAA/R03 dry cell batteries .....	2
● Output cable .....	1
● Control cable .....	1
● Electrostatic charge removal sheet .....	1
● Operating instructions .....	1
● Index label sheet .....	1
● CD liner notes file .....	1

#### NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

### 3. PANEL FACILITIES

#### FRONT PANEL



① POWER STANDBY/ON switch

② Remote sensor

Receives the signal from the remote control unit.

③ RANDOM button

④ ADLC button

⑤ TIME button

⑥ MODE button

⑦ CLEAR button

⑧ Display window

⑨ Track/Manual search buttons

(◀◀◀ / ▶▶▶)

⑩ Stop button (■)

⑪ DISC buttons (-/+)

⑫ Play button (▶)

⑬ Pause button (II)

⑭ PLAY INDICATOR

⑮ Rack 1

⑯ Rack 2

⑰ Rack 3

⑱ Rack 4

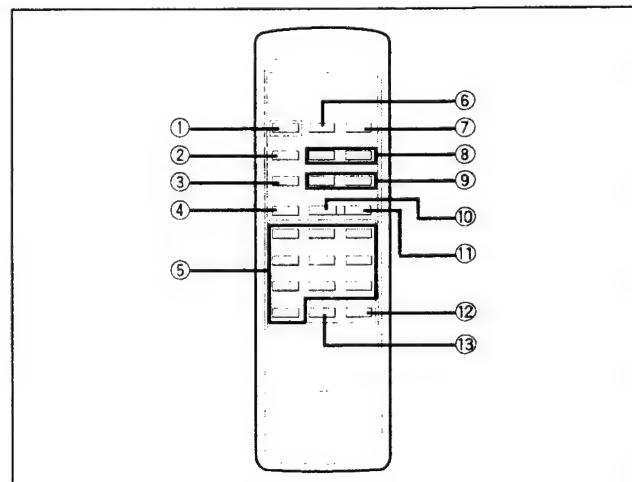
⑲ EJECT button for Rack 1 (▲)

⑳ EJECT button for Rack 2 (▲)

㉑ EJECT button for Rack 3 (▲)

㉒ EJECT button for Rack 4 (▲)

#### REMOTE CONTROL UNIT



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① POWER button

② PGM button

③ MODE button

④ Stop button (■)

⑤ Digit buttons (0 - 9)

⑥ REPEAT button

⑦ RANDOM button

⑧ DISC buttons (-/+)

⑨ Track search buttons (◀◀◀ / ▶▶▶)

⑩ Pause button (II)

⑪ Play button (▶)

⑫ TRACK SET button

⑬ DISC SET button

## 4. DISASSEMBLY

### 4.1 REMOVAL OF LOADING MECHANISM ASSY

1. Remove the bonnet. (At this time, return the loading mechanism assy to the home position if it is not in the home position.)
2. Remove the rivet and then remove the rope unit.
3. Remove the four screws ① and then remove the select guide.
4. Remove the flat cable from the connector (CN625), and also remove the rope unit from the loading mechanism assy.
5. Raise the loading mechanism assy and remove it.

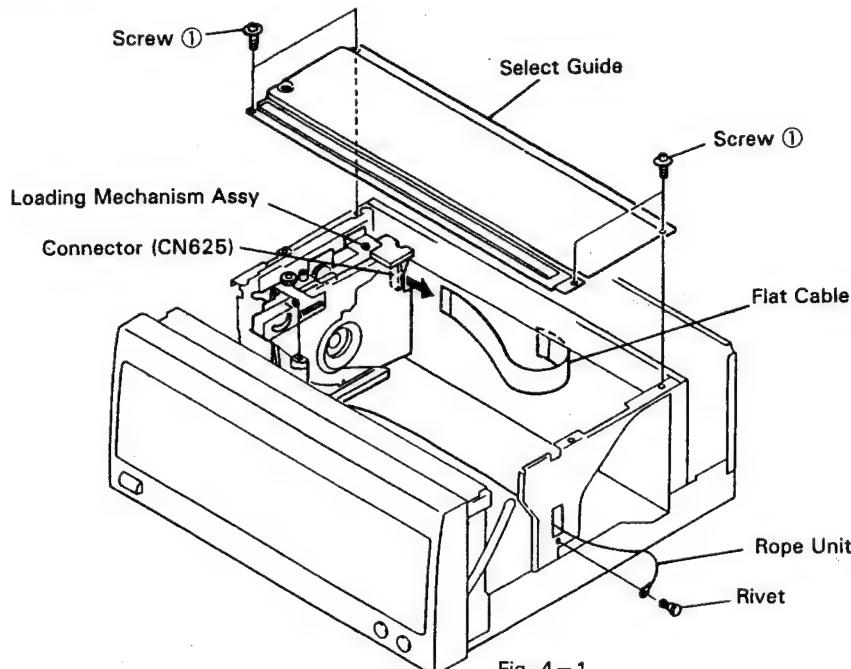


Fig. 4-1

*Note) Execute assembly in reverse order of the disassembly.*

*However, the following items must be executed.*

- **Synchronization matching for upper and lower gear**

Adjust the relation between the sub gear teeth and the select guide as shown in Fig. 4-2.

- **Position confirmation for body and loading mechanism assy**

Looking from the top, conform that part ④ of the gear angle B and part ⑤ of the angle L are parallel. (Refer to Fig. 4-3.)

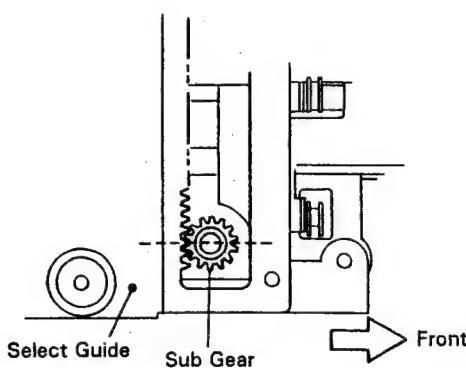


Fig. 4-2

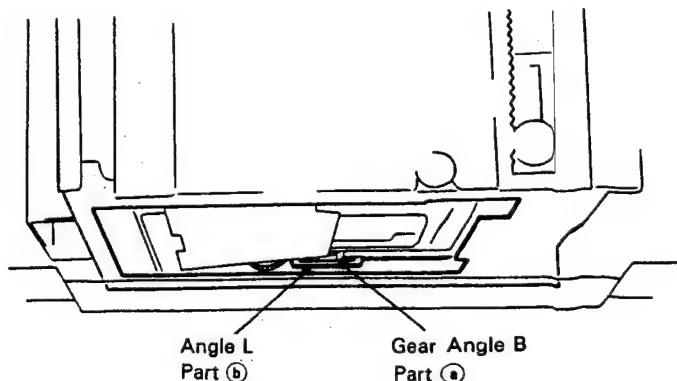


Fig. 4-3

## 4.2 REMOVAL OF SERVO MECHANISM ASSY

1. Remove the loading mechanism assy. [Refer to "4.1 REMOVAL OF LOADING MECHANISM ASSY".]
2. Remove the screw ① and the clamper base.
3. Remove the stopper. (At this time, remove the stopper spring at the same time.)
4. Remove the arm spring.
5. Remove the three screws ③ fixing the D cup, remove the screw ④ fixing the side angle and the connector (CN626), and then remove the D cup and the side angle.
6. Remove arm A, arm B, and the connecting rack.
7. Remove the four screws ⑤ fixing the servo mechanism assy. Remove the flexible circuit board of the pickup assy from the connector (CN621) and pull out the servo mechanism assy.
8. Remove the connector (CN610) of the servo mechanism assy and then remove the servo mechanism assy.

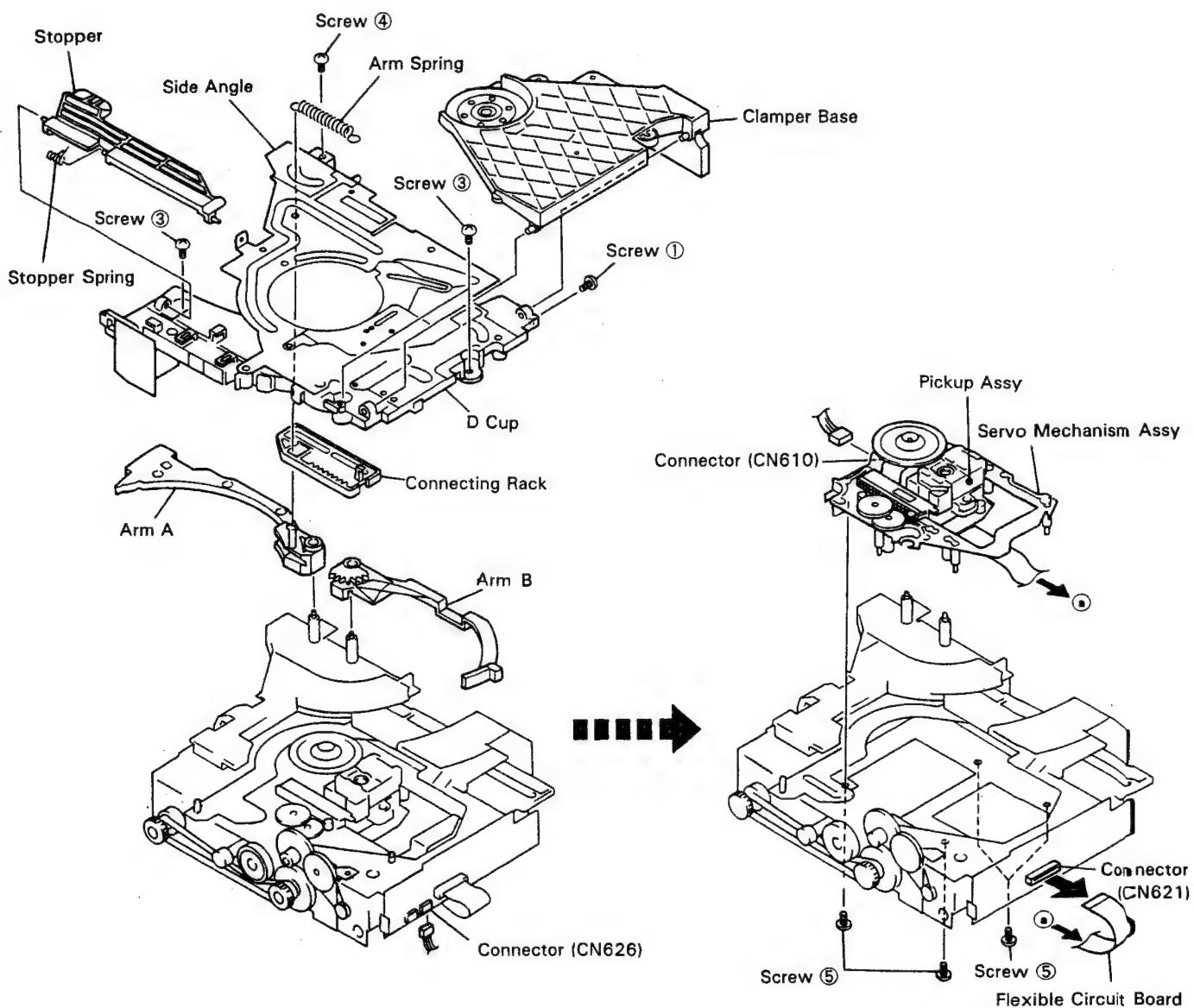


Fig. 4-4

Note) Execute assembly in reverse order of the disassembly.  
However, the following items must be executed.

● Synchronization matching for arm A, arm B and connecting rack

Confirm correct positioning of the drive plate mark and the mark of gear A as shown in Fig. 4-5. If the position is not correct, turn the worm [refer to "4.3 REMOVAL OF BELT A"] to obtain the correct position. Also, install arm A and arm B as shown in Fig. 4-6 and position the connecting rack as shown in Fig. 4-6 (refer to Ⓐ), seen from above.

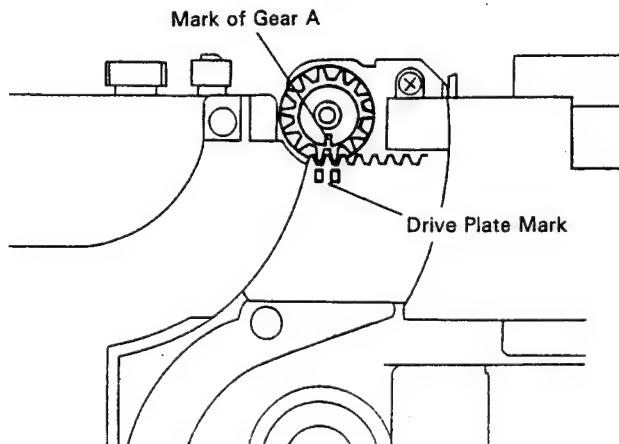


Fig. 4-5

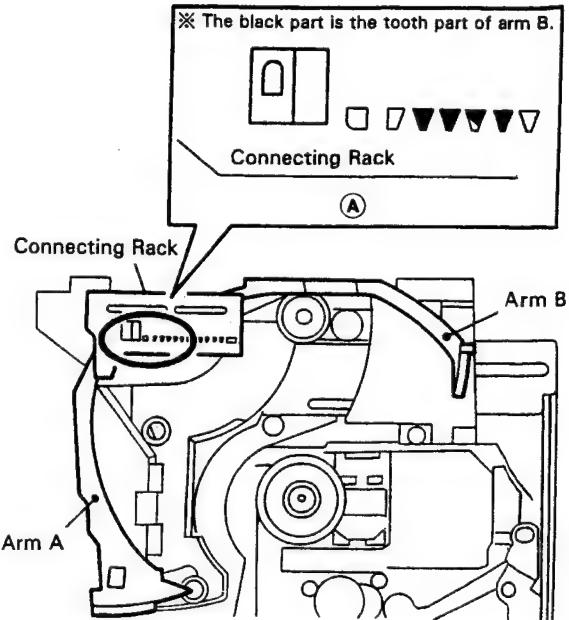
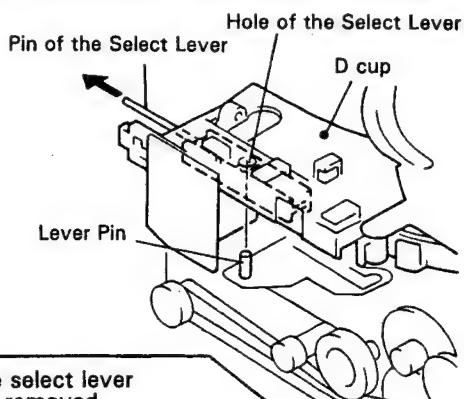


Fig. 4-6

● Select lever position matching

When installing the D cup, pull out the pin of the select lever and insert the lever pin into the select lever hole.



- When the select lever has been removed

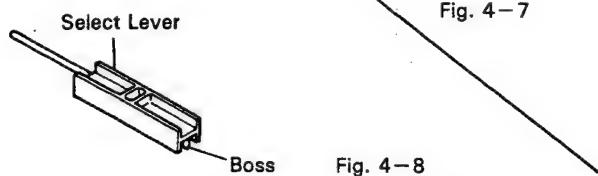


Fig. 4-8

Note: For installation of the select lever, insert it with the boss pointing down.

● Caution items for installation of the clammer base  
Bring part ⓒ of the clamper base onto part Ⓞ of the stopper.

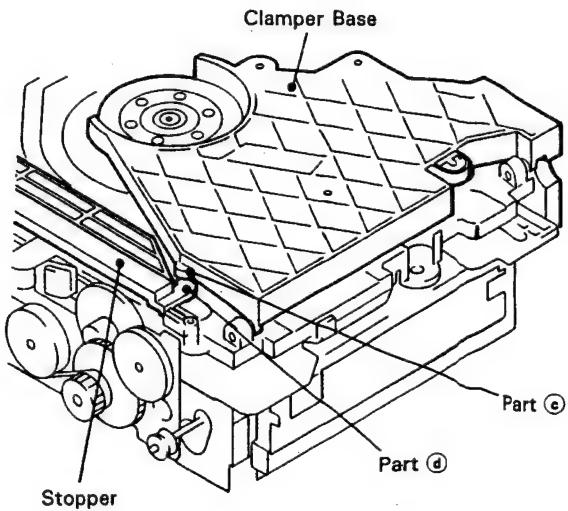


Fig. 4-9

#### 4.3 REMOVAL OF BELT A

1. Remove the loading mechanism assy. [Refer to "4.1 REMOVAL OF LOADING MECHANISM ASSY".]
  2. Pull the synchro shaft together with the sub gear. (At this time, the synchro gear, the collar, and the timing belt come off together.)
  3. Remove the two screws ① fixing the gear angle A and remove the gear angle A. (At this time, the cord clamer also comes off.)
  4. Remove the washer fixing the gear A and the worm wheel and remove the belt A.
- If the work is difficult, remove the connectors (CN641, CN624) and cut the binder to make the work easier.

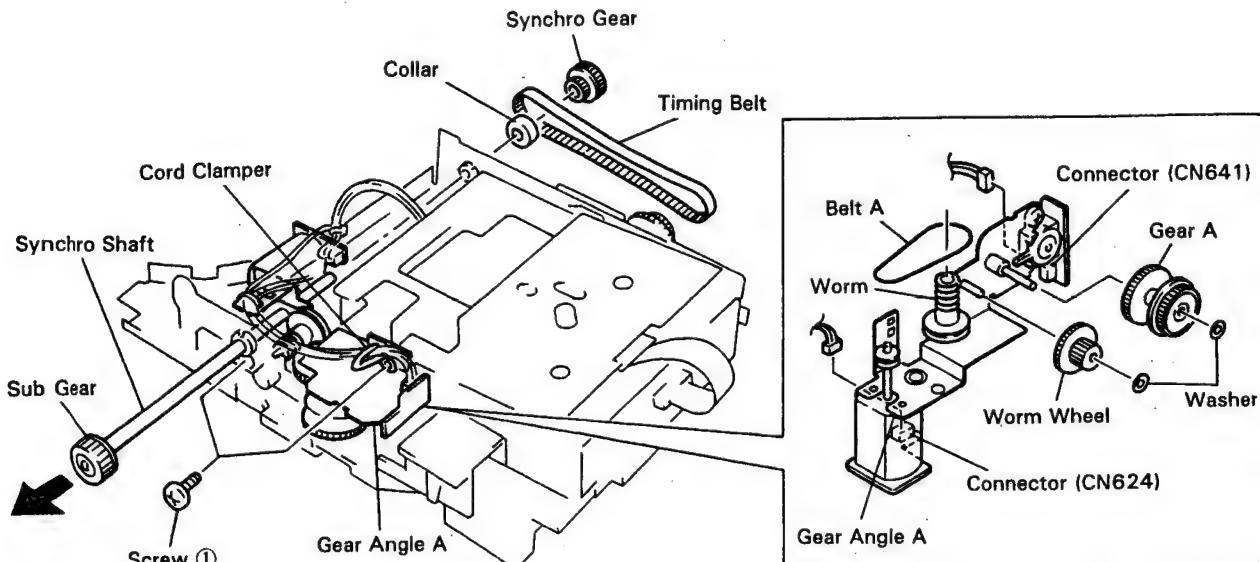


Fig. 4-10

*Note) Execute assembly in reverse order of the disassembly.*

*However, the following items must be executed.*

##### ● Synchronization matching for gear A and drive plate

Match the drive plate mark and the mark of gear A as shown in Fig. 4-11, and then fix the gear angle A with the screws. (At this time, the lever of the loading switch must be on the upper side of the projection of gear A.)

##### ● Synchro belt installation

Place the synchro belt as shown in Fig. 4-12 onto the synchro gear S. Place the collar onto the synchro shaft, place the timing belt onto the synchro gear, and press fit the synchro shaft in this condition.

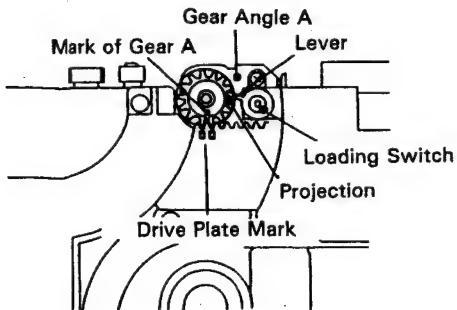


Fig. 4-11

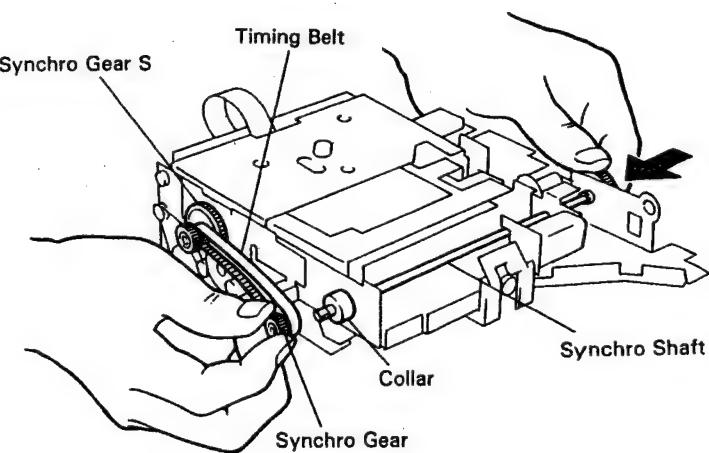


Fig. 4-12

## 5. EXPLODED VIEWS, PACKING AND PARTS LIST

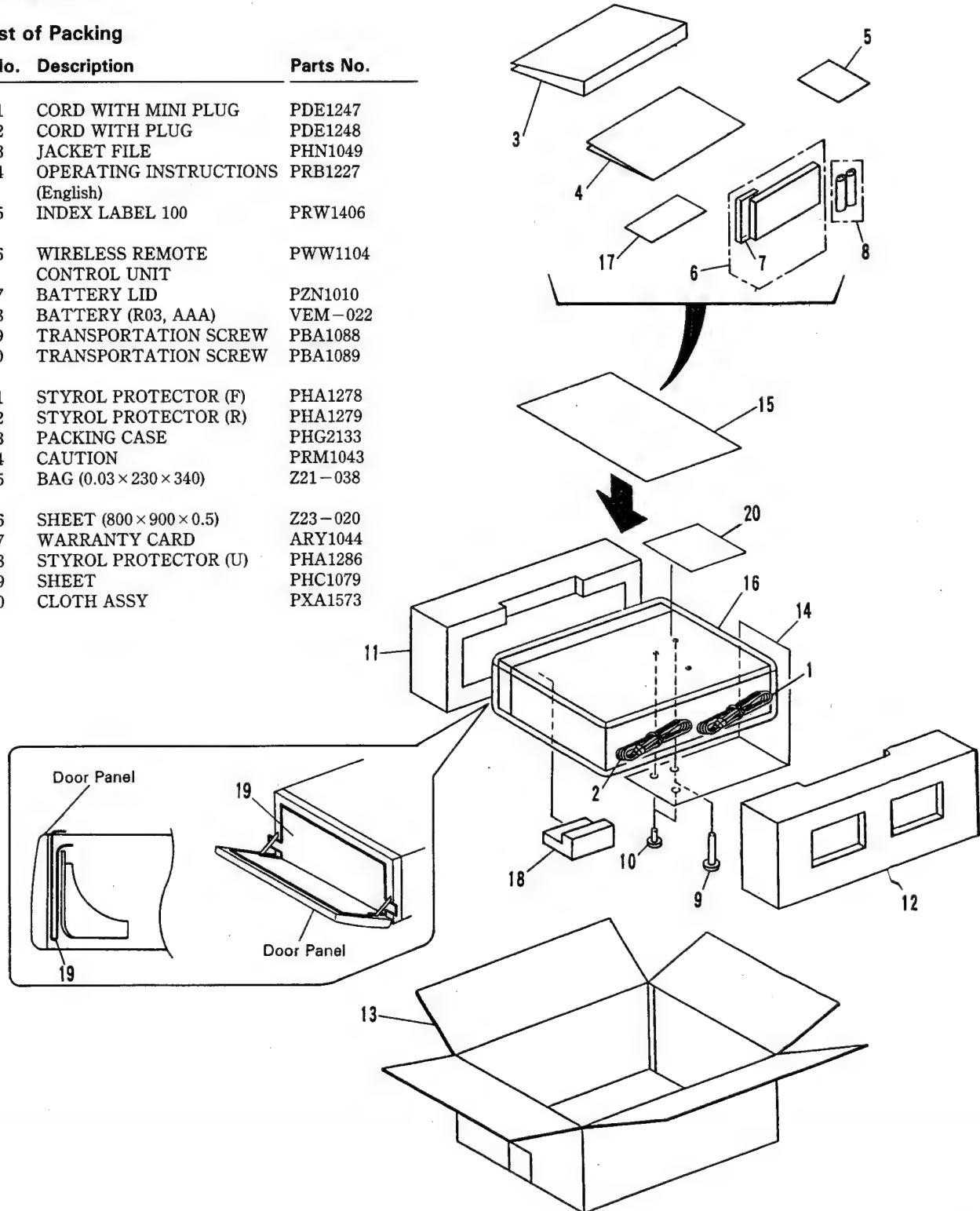
### NOTES :

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ▲ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

### 5.1 PACKING

#### Parts List of Packing

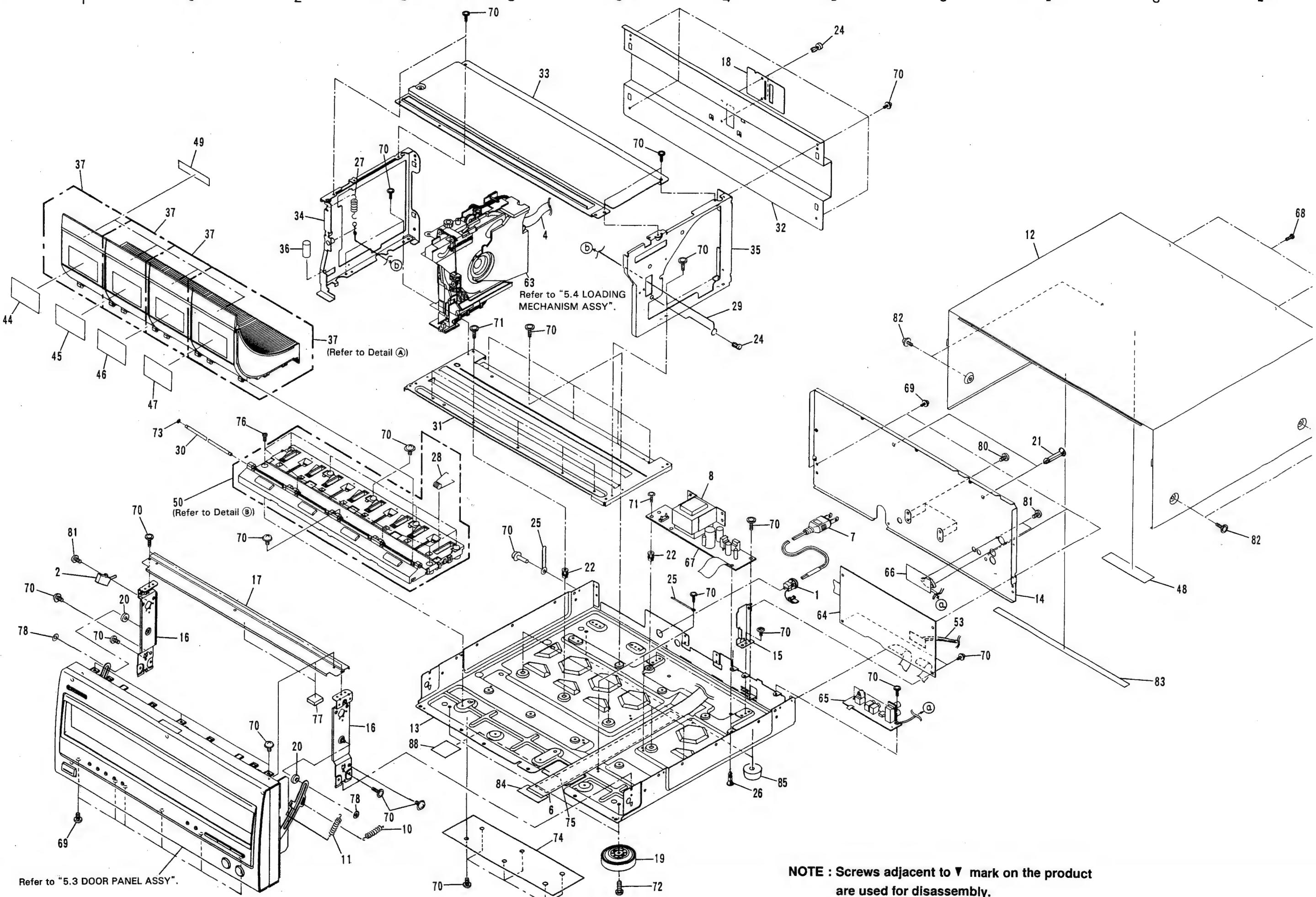
Mark	No.	Description	Parts No.
	1	CORD WITH MINI PLUG	PDE1247
	2	CORD WITH PLUG	PDE1248
	3	JACKET FILE	PHN1049
	4	OPERATING INSTRUCTIONS (English)	PRB1227
	5	INDEX LABEL 100	PRW1406
	6	WIRELESS REMOTE CONTROL UNIT	PWW1104
	7	BATTERY LID	PZN1010
NSP	8	BATTERY (R03, AAA)	VEM-022
	9	TRANSPORTATION SCREW	PBA1088
	10	TRANSPORTATION SCREW	PBA1089
	11	STYROL PROTECTOR (F)	PHA1278
	12	STYROL PROTECTOR (R)	PHA1279
	13	PACKING CASE	PHG2133
	14	CAUTION	PRM1043
	15	BAG (0.03 × 230 × 340)	Z21-038
NSP	16	SHEET (800 × 900 × 0.5)	Z23-020
	17	WARRANTY CARD	ARY1044
	18	STYROL PROTECTOR (U)	PHA1286
	19	SHEET	PHC1079
	20	CLOTH ASSY	PXA1573

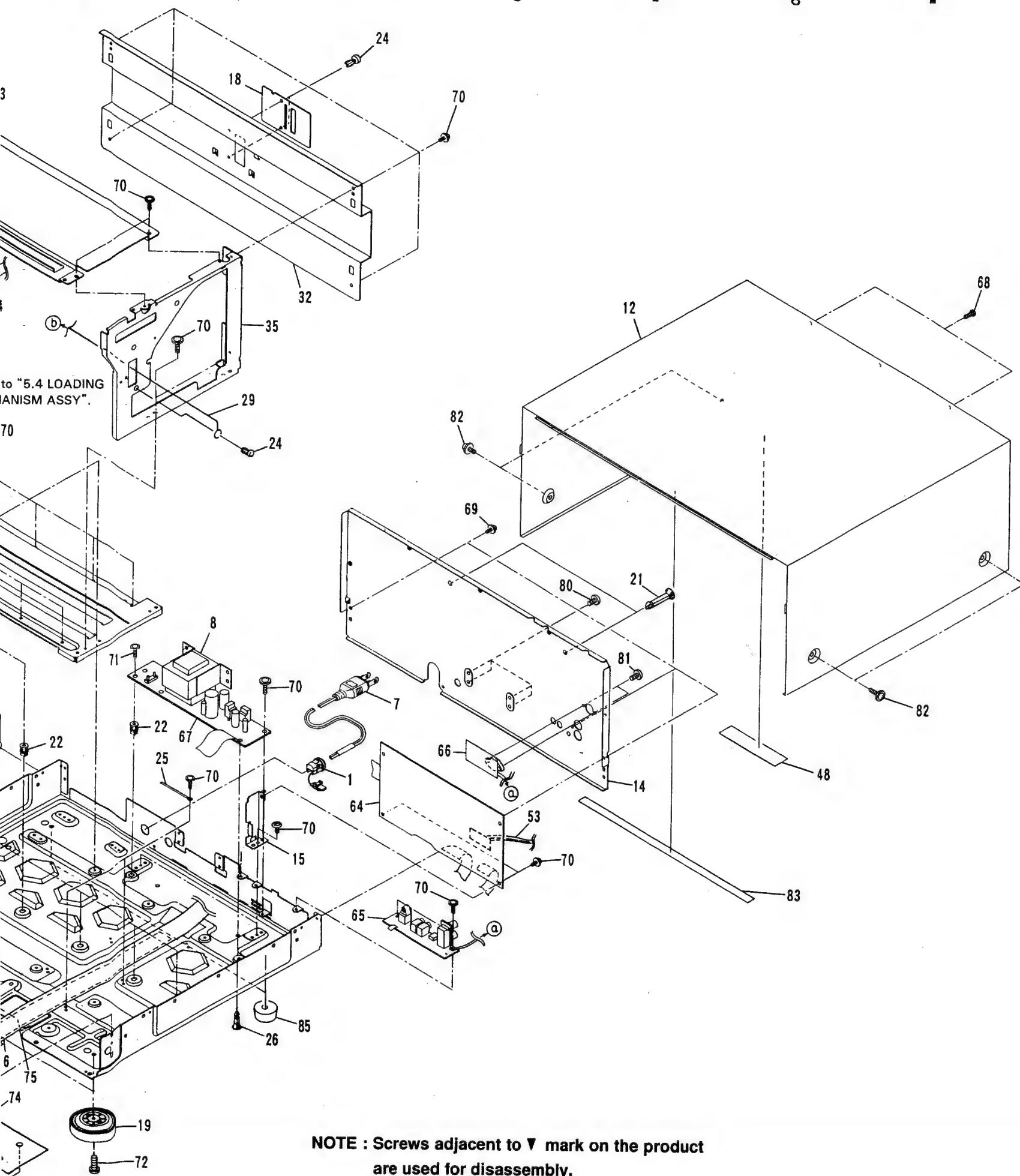


## 5.2 EXTERIOR

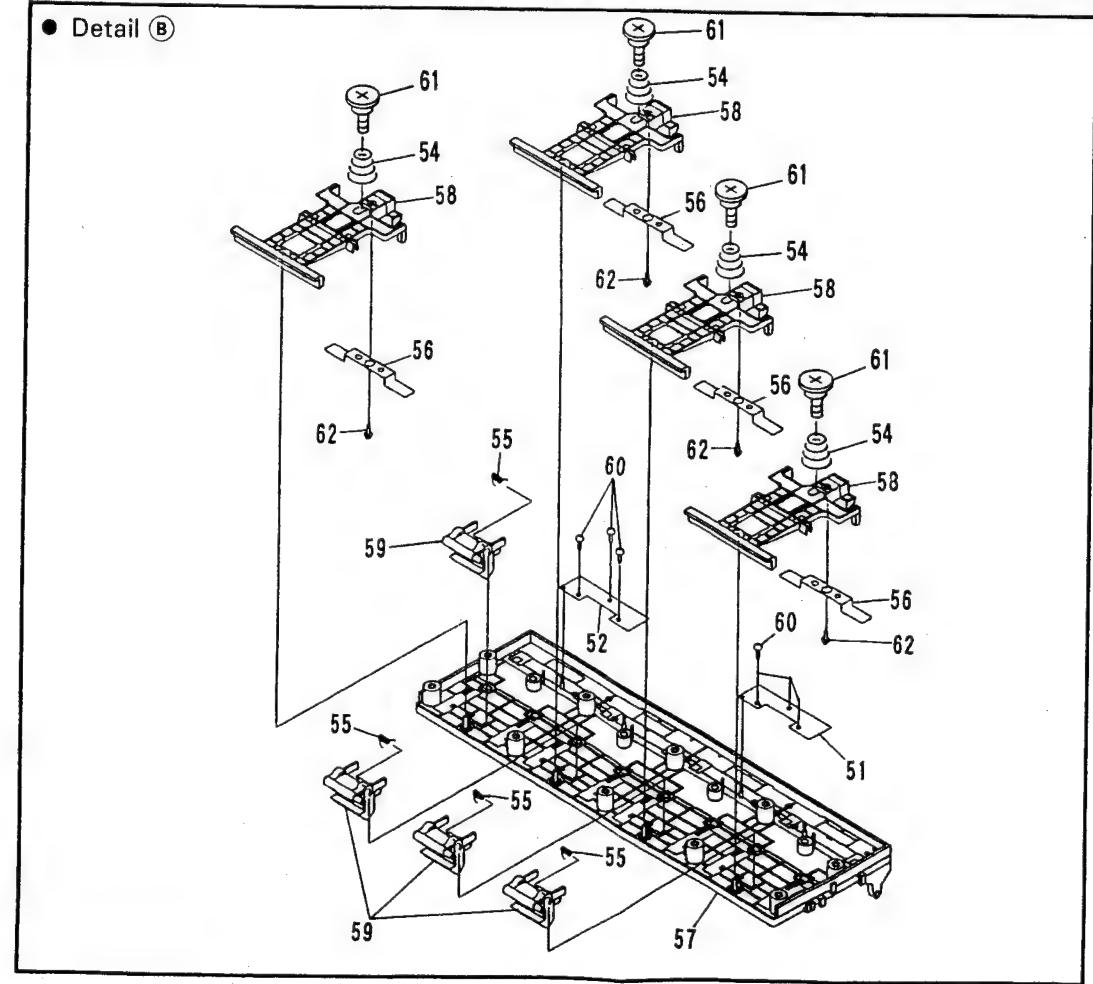
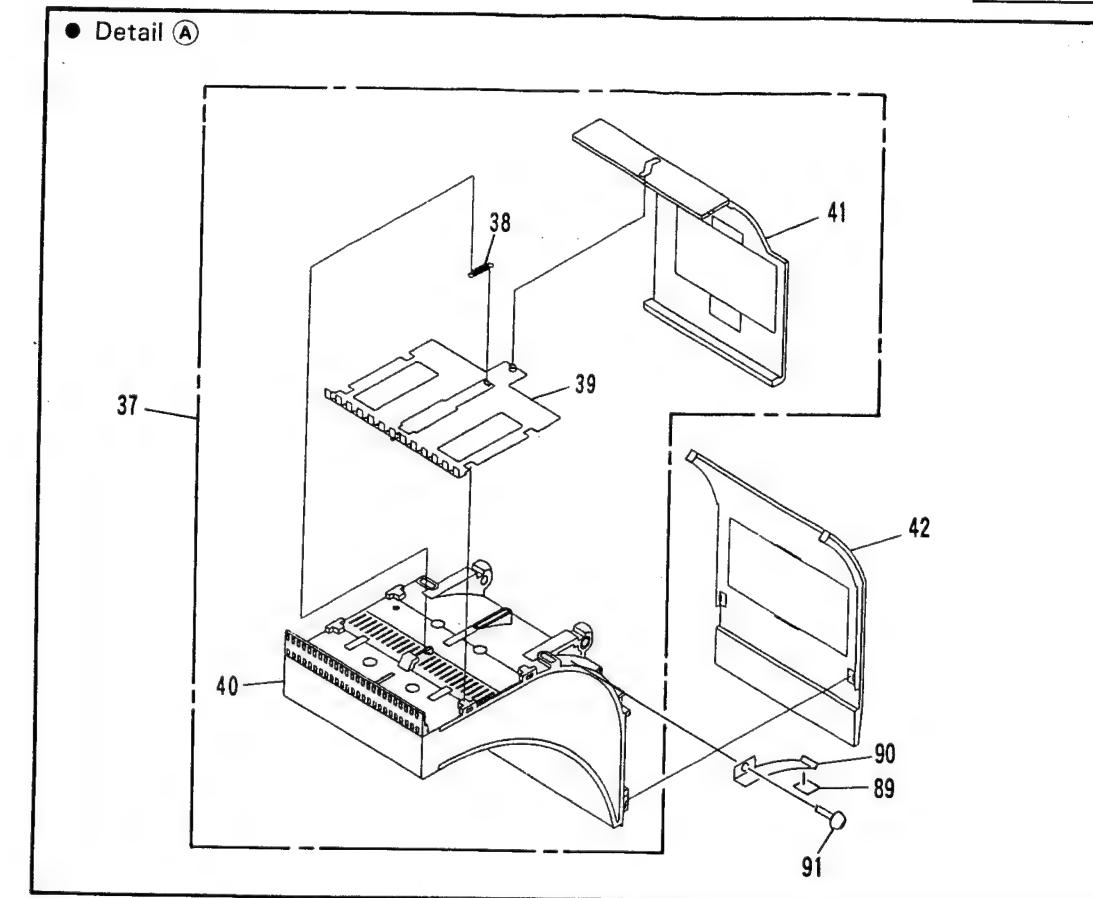
### Parts List of Exterior

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
△	1	CORD STOPPER (PLASTIC)	CM-22C	NSP	51	RACK BOARD A ASSY	PWZ2779
	2	LEVER SWITCH (S)	DSK1003	NSP	52	RACK BOARD B ASSY	PWZ2781
	3	.....			53	CONNECTOR ASSY 5P	PDE1266
	4	22P F.F.C/30V	PDD1157		54	CONICAL SPRING	PBH1206
	5	.....			55	LEVER SPRING	PBH1204
	6	28P F.F.C/30V	PDD1164		56	SWITCH PLATE	PBK1131
△	7	AC POWER CORD	PDG1015		57	RACK BASE	PNW2407
△	8	POWER TRANSFORMER	PTT1297		58	RACK LOCK	PNW2565
	9	.....			59	LOCK LEVER	PNW2409
	10	CANCEL SPRING	PBH1173		60	SCREW	BPZ26P060FZK
	11	SUPPORT SPRING	PBH1192		61	STOPPER SCREW	PBA1095
	12	BONNET CASE	PYY1178		62	SCREW	PPZ30P060FMC
NSP	13	UNDER BASE	PNA2057	NSP	63	LOADING MECHANISM ASSY	PXA1571
	14	REAR BASE (FE)	PNA2218		64	MAIN BOARD ASSY	PWZ3077
	15	PCB ANGLE	PNB1468	NSP	65	OUTPUT BOARD ASSY	PWZ3080
	16	SIDE ANGLE	PNB1469	NSP	66	I/O CONNECTOR BOARD ASSY	PWX1390
	17	ESCUTCHEON ANGLE	PNB1502		67	POWER BOARD ASSY	PWZ3065
	18	FFC HOLDER	PNM1274		68	SCREW	BBZ30P100FCC
	19	INSULATOR	PNW1912		69	SCREW	BBZ30P080FCC
	20	ROLLER	PNW2468		70	SCREW	IBZ30P060FCC
NSP	21	SPACER 24 (PLASTIC)	PNW2484		71	SCREW	IBZ30P150FCC
	22	SPACER (PLASTIC)	PNY-404		72	SCREW	IBZ30P100FCC
	23	.....			73	E RING	YE30FUC
	24	RIVET (PLASTIC)	RBM-003	NSP	74	BOTTOM PLATE	PNB1511
	25	CORD CLAMPER (STEEL)	RNH-184		75	FFC PLATE	PNM1275
NSP	26	SPACER	VEC1596		76	SCREW	PBA1099
	27	WIRE SPRING	PBH1182		77	DISC GUARD	PNM1245
	28	EJECT SPRING	PBH1214		78	WASHER	WT36D120D050
	29	ROPE UNIT	PBL1007		79	.....	
	30	SHAFT	PLA1138		80	SCREW	IBZ30P080FCC
	31	MAIN BASE	PNA2108		81	SCREW	BBZ26P060FCC
	32	REAR ANGLE	PNA2126		82	SCREW	FBT40P080FZK
	33	SELECT GUIDE	PNB1479	NSP	83	BONNET GUARD	PNM1244
	34	ANGLE L	PNB1516		84	JOINT BOARD ASSY	PWZ3074
	35	SIDE ANGLE R	PNB1517		85	FOOT ASSY	AEC1531
NSP	36	SCREW HOLDER	PNW2489		86	.....	
	37	DISC RACK ASS'Y	PXA1574		87	.....	
	38	GUIDE SPRING	PBH1177		88	ISOLATION SHEET	PNM1270
	39	GUIDE PLATE	PNB1476	NSP	89	RUBBER HOLDER	PEB1283
NSP	40	RACK	PNW2583		90	CLIK PLATE	PBK1133
NSP	41	TOP GUIDE	PNW2405		91	SCREW	Z39-024
	42	RACK PANEL	PNW2406				
	43	.....					
	44	RACK WINDOW 1	PAM1674				
	45	RACK WINDOW 2	PAM1675				
	46	RACK WINDOW 3	PAM1676				
	47	RACK WINDOW 4	PAM1677				
	48	65 LABEL	ORW1069				
	49	ADDRESS LABEL	PRW1359				
NSP	50	RACK BASE ASS'Y	PXA1572				





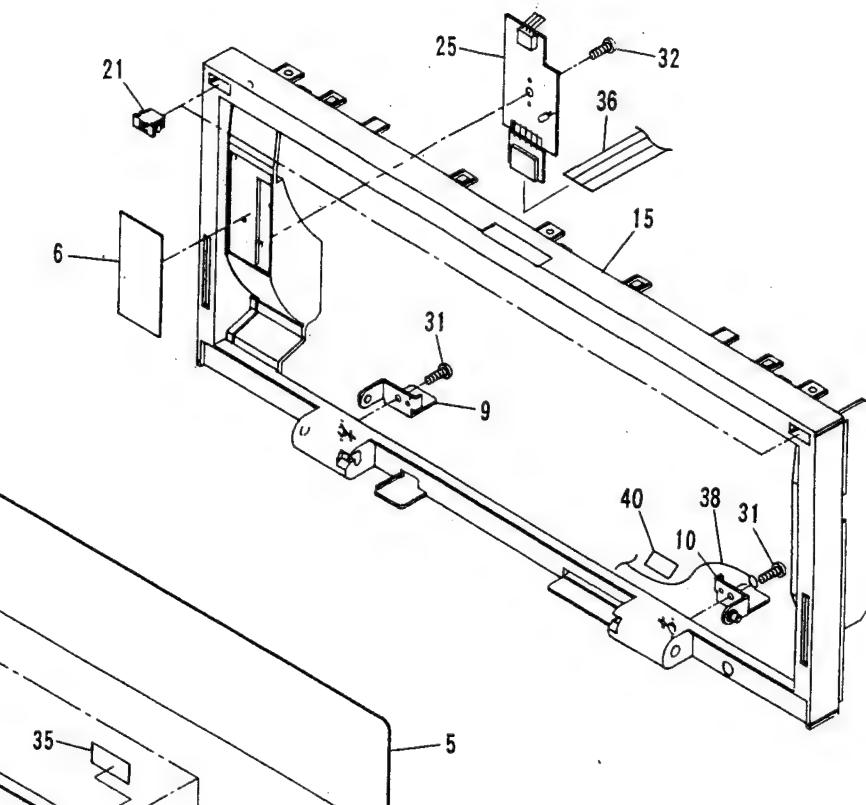
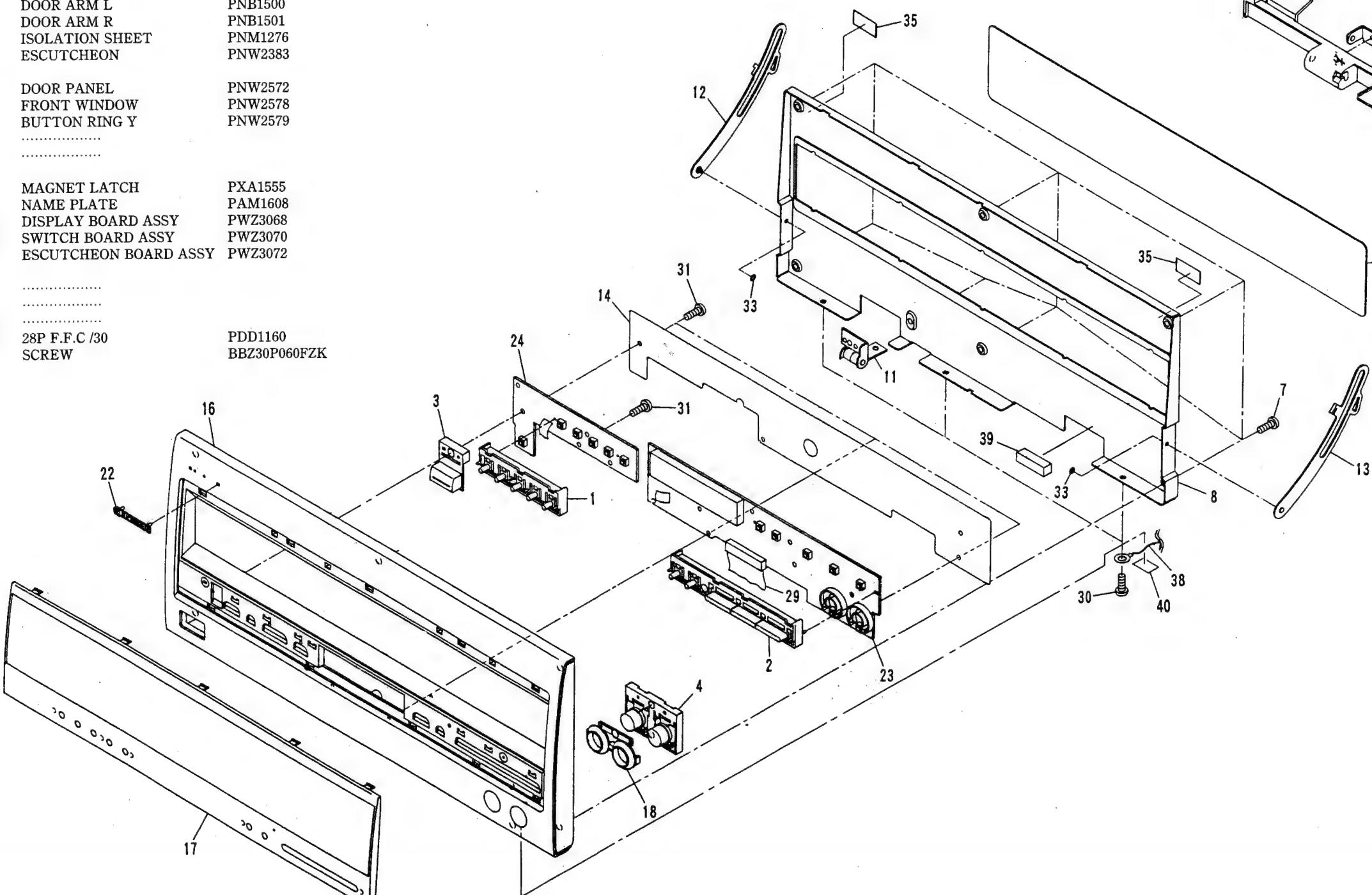
**NOTE : Screws adjacent to ▼ mark on the product  
are used for disassembly.**



## 5.3 DOOR PANEL ASSY

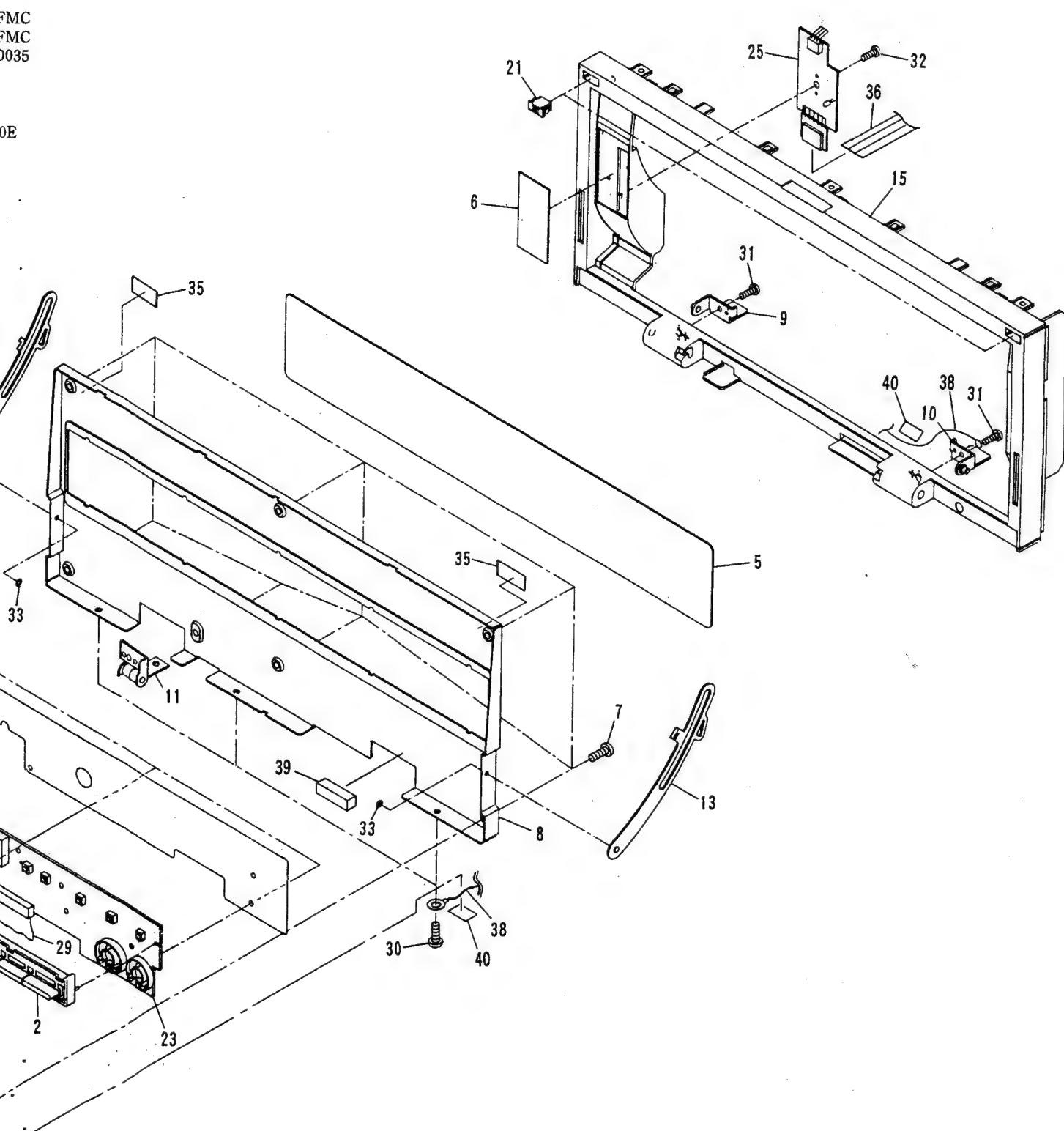
## Parts List of Door Panel Assy

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
A	1	CONTROL BUTTON L	PAC1771	31	SCREW	PPZ30P100FMC	
	2	CONTROL BUTTON R	PAC1807	32	SCREW	PPZ30P060FMC	
	3	POWER BUTTON D	PAC1773	33	WASHER	WT26D047D035	
	4	DISC BUTTON	PAC1808	34	.....		
	5	CLEAR PLATE	PAM1681	NSP	35	PROTECTION TAPE	PNM1263
	6	SHEET G	PAM1680	36	PARALLEL WIRE 3P	D20PYY0360E	
	7	SCREW	PBA1071	37	.....		
	8	DOOR STAY	PNB1534	NSP	38	EARTH LEAD UNIT	PDF1074
	9	DOOR ANGLE L	PNB1471	39	CUSHION	PNM1271	
	10	DOOR ANGLE R	PNB1472	NSP	40	TAPE	PNM1249
	11	TILT UNIT	PNB1495				
	12	DOOR ARM L	PNB1500				
	13	DOOR ARM R	PNB1501				
	14	ISOLATION SHEET	PNM1276				
	15	ESCUOTCHEON	PNW2383				
B	16	DOOR PANEL	PNW2572				
	17	FRONT WINDOW	PNW2578				
	18	BUTTON RING Y	PNW2579				
	19	.....					
	20	.....					
NSP	21	MAGNET LATCH	PXA1555				
	22	NAME PLATE	PAM1608				
	23	DISPLAY BOARD ASSY	PWZ3068				
	24	SWITCH BOARD ASSY	PWZ3070				
	25	ESCUOTCHEON BOARD ASSY	PWZ3072				
	26	.....					
	27	.....					
	28	.....					
	29	28P F.F.C /30	PDD1160				
	30	SCREW	BBZ30P060FZK				

5.4 LOAD  
● EXTERI

## Parts List of

Mark	No.	I
NSP	1	1
NSP	2	2
NSP	3	3
NSP	4	4
NSP	5	5
	6	6
	7	7
	8	8
	9	9
	10	10
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	12	12
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	44	44
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	46	46
	47	47
	48	48
	49	49
	50	50



## 5.4 LOADING MECHANISM ASSY

### ● EXTERIOR (1/2)

#### Parts List of Exterior (1/2)

A	Mark	No.	Description	Parts No.		Mark	No.	Description	Parts No.
	NSP	1	MECHA BOARD ASSY	PWZ2776		51	GEAR ANGLE B		PNB1496
	NSP	2	SENSOR BOARD ASSY	PWZ2777		52	SLIDER		PNB1531
	NSP	3	LOADING BOARD ASSY	PWZ2778		53	UPPER PLATE		PBK1141
	NSP	4	SELECT MOTOR BOARD ASSY	PWZ2782		54	ROLLER		PNW1967
	NSP	5	LOADING MOTOR BOARD ASSY	PWZ2783		55	GEAR PULLEY		PNW2411
		6	CONNECTOR ASSY (3P)	PDE1234		56	GEAR L		PNW2412
		7	CONNECTOR ASSY (4P)	PDE1235		57	BINDER		Z09-056
		8	SCREW	PBA1090		58	GEAR A		PNW2420
		9	STOPPER SPRING	PBH1183		59	WORM WHEEL		PNW2421
		10	ARM SPRING	PBH1202		60	WORM		PNW2422
		11	BELT	PEB1268		61	C CUP		PNW2537
		12	BELT	PEB1269		62	SHEET		PED1026
		13	.....			63	GEAR S		PNW2433
	NSP	14	CUSHION (ART. SUEDE)	PED-049		64	SYNCHRO GEAR S		PNW2434
	NSP	15	CUSHION (ART. SUEDE)	PED1016		65	FLEXIBLE GUARD		PNM1264
	NSP	16	SYNCHRO SHAFT	PLA1131					PEA1320
	NSP	17	SPACER	PLA1133					PNW1634
	NSP	18	LOADING BASE	PNB1532					PXM1002
	NSP	19	LEVER	PNB1486					PBA1084
	NSP	20	SLIDE ANGLE	PNB1489					PBA1087
		21	.....			71	FLOAT SPRING		PBH1197
		22	.....			72	FLOAT SPRING B		PBH1198
		23	ROLLER	PNW2299		73	CONNECTOR ASS'Y (4P)		PDE1240
		24	SYNCHRO GEAR	PNW2413		74	FLOAT RUBBER		PEB1267
		25	ARM A	PNW2554		75	RUBBER BUSHING		VEB1138
		26	ARM B	PNW2541		76	SCREW		BBZ26P060FZK
		27	PULLEY	PNW2416		77	SCREW		BBZ30P050FZK
		28	SELECT LEVER	PNW2417		78	SCREW		BBZ30P080FCC
		29	DRIVE PLATE	PNW2549		79	SCREW		BPZ30P060FZK
		30	CLAMPER	PNW2569		80	.....		
C	NSP	31	TENSIONER	PNW2423		81	SCREW		PMZ20P030FMC
	NSP	32	RACK	PNW2555		82	.....		
	NSP	33	SUB GEAR	PNW2425		83	WASHER		WT17D034D025
	NSP	34	A CUP	PNW2553		84	WASHER		WT21D050D025
	NSP	35	B CUP	PNW2427		85	WASHER		WT26D047D025
	NSP	36	D CUP	PNW2429		86	WASHER		WT26D047D050
	NSP	37	STOPPER	PNW2556		87	WASHER		WT36D072D025
	NSP	38	CLAMPER BASE	PNW2576		88	E RING		YE25FUC
	NSP	39	BUSHING	PNW2435		89	E RING		YE30FUC
	NSP	40	DISC GUIDE	PNW2550		90	SERVO MECHANISM ASS'Y B	PXA1539	
		41	ROLLER SHAFT	PLA1139					
		42	ROLLER	DNK2391					
		43	.....						
		44	BELT A	PEB1244					
		45	D CUP ASSY	PEA1329					
D		46	SIDE ANGLE	PNB1533					
		47	GEAR ANGLE	PNB1485					
		48	SLIDE LINK	PNB1490					
		49	.....						
		50	SCREW	PBA1099					

1

2

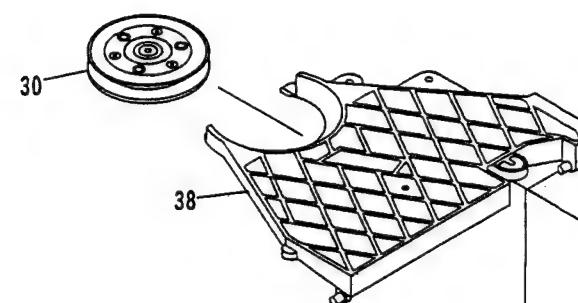
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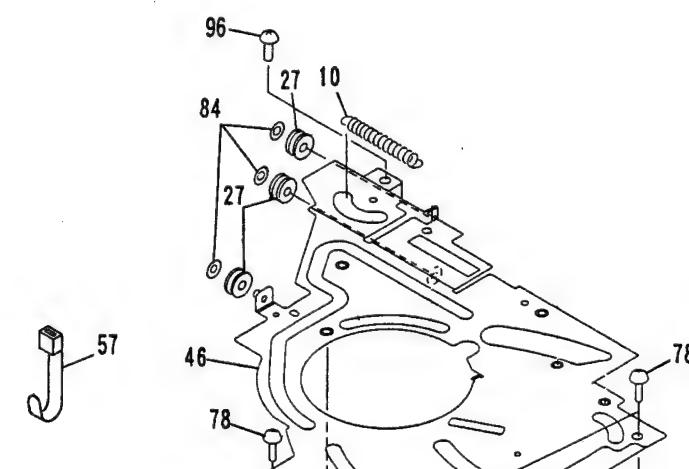
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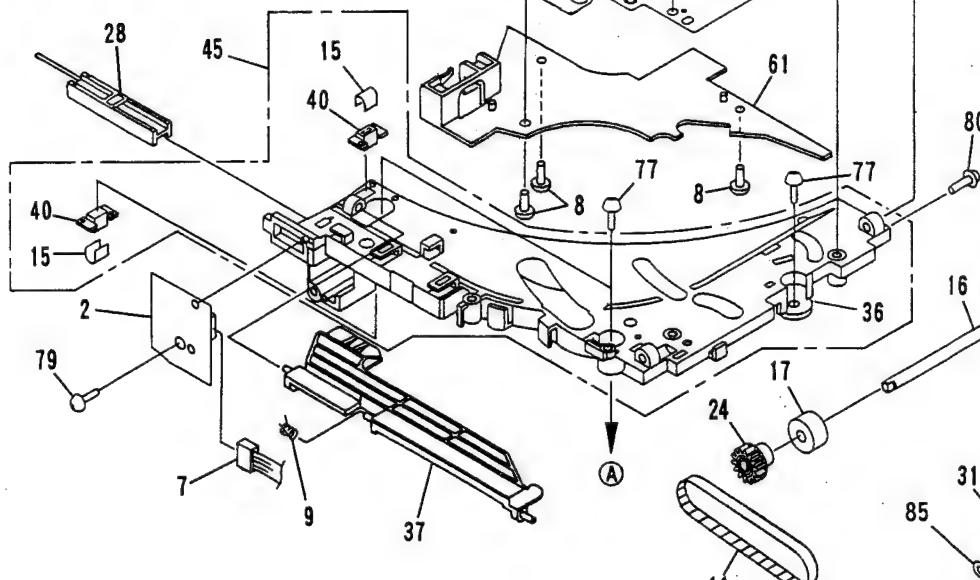
A



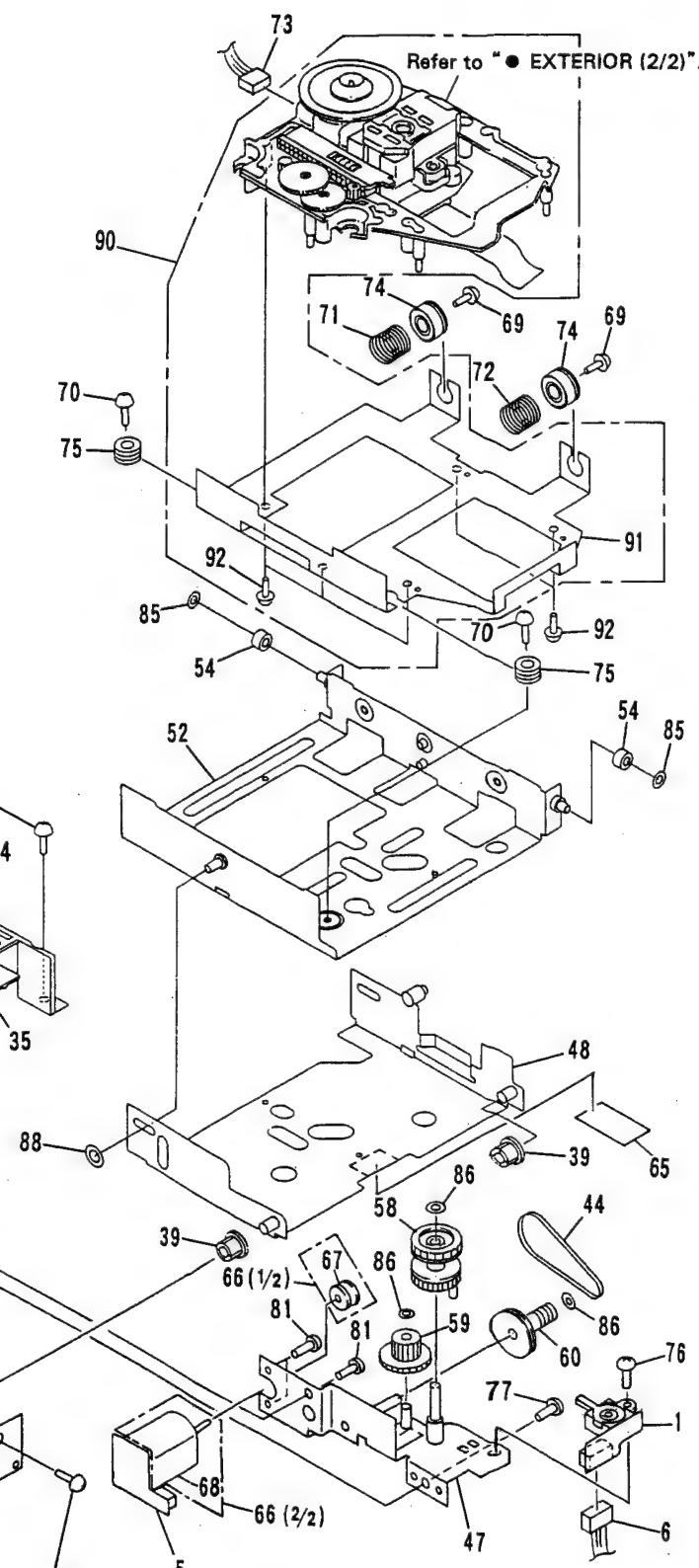
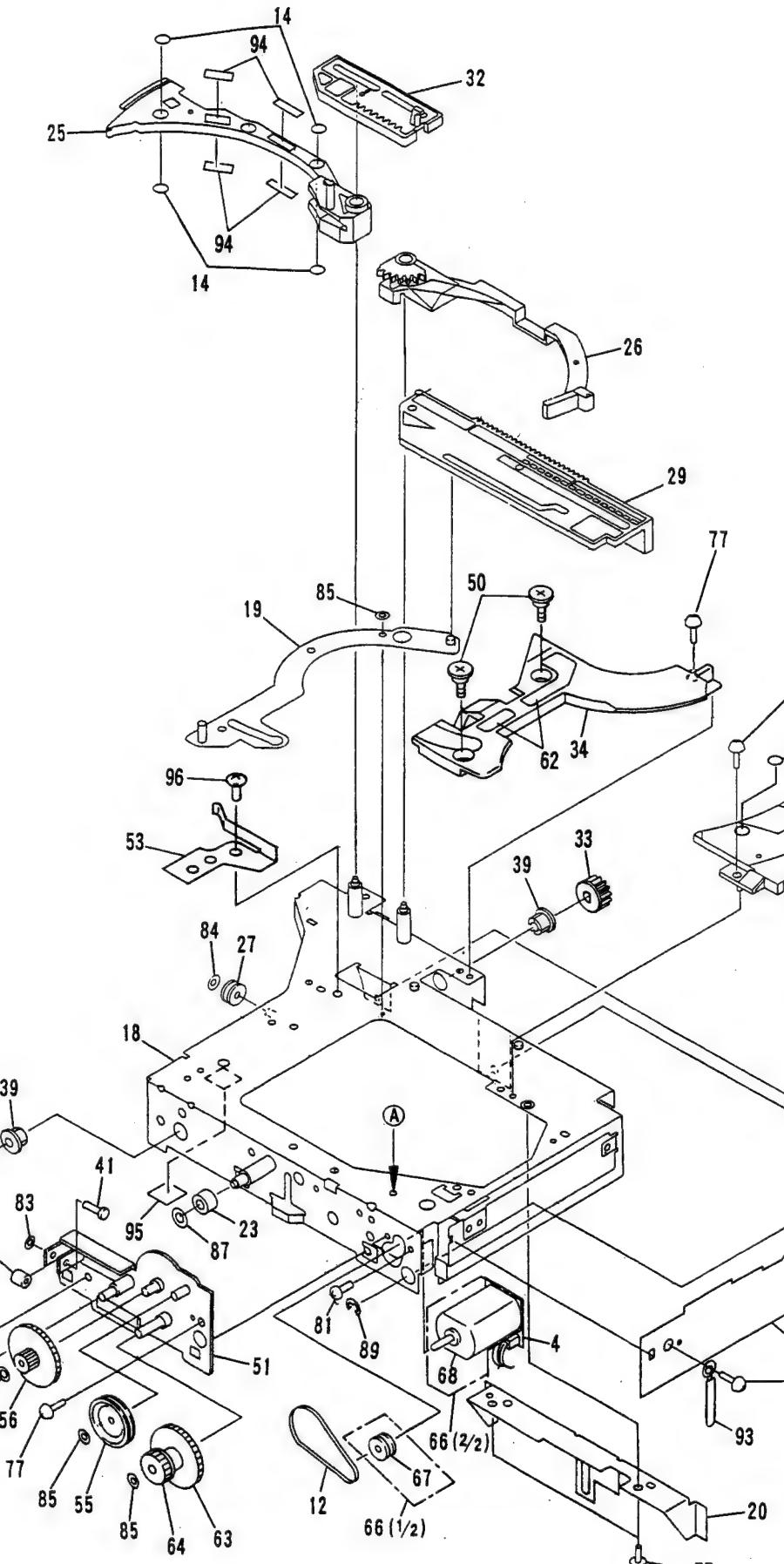
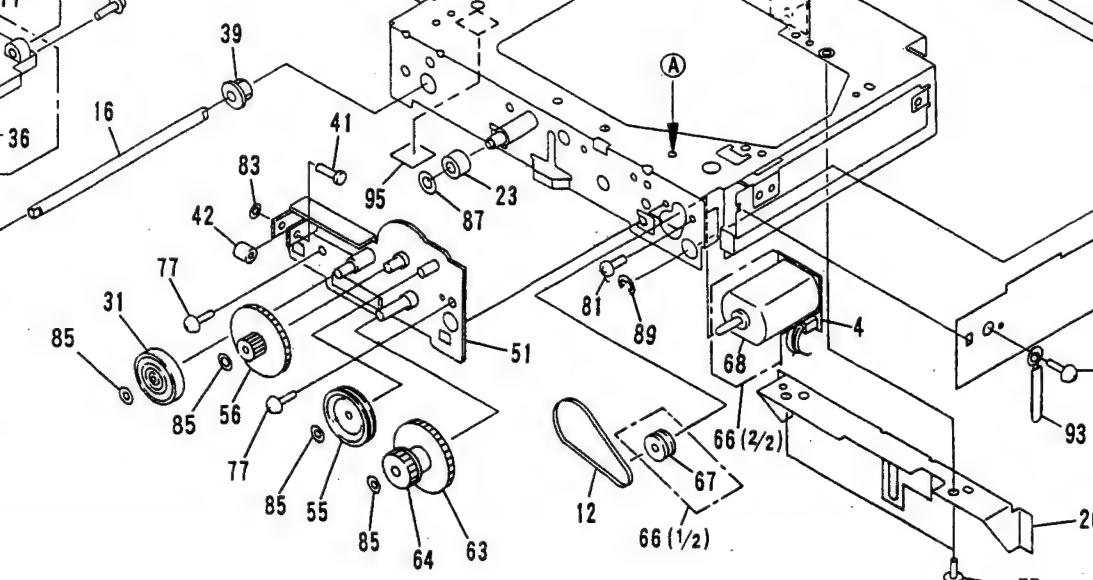
B



C



D



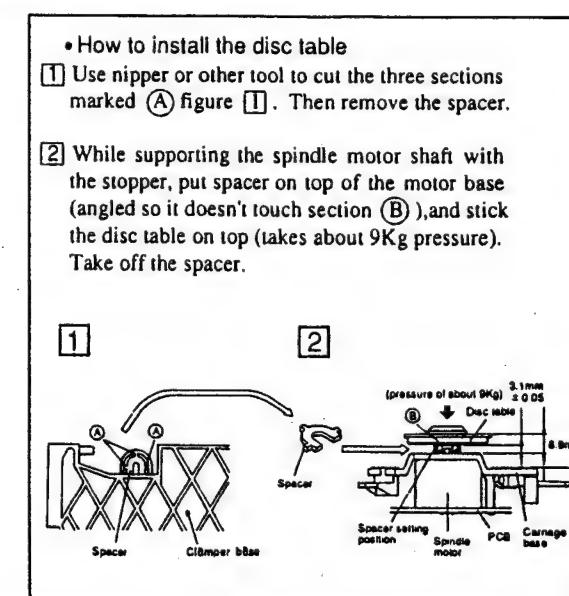
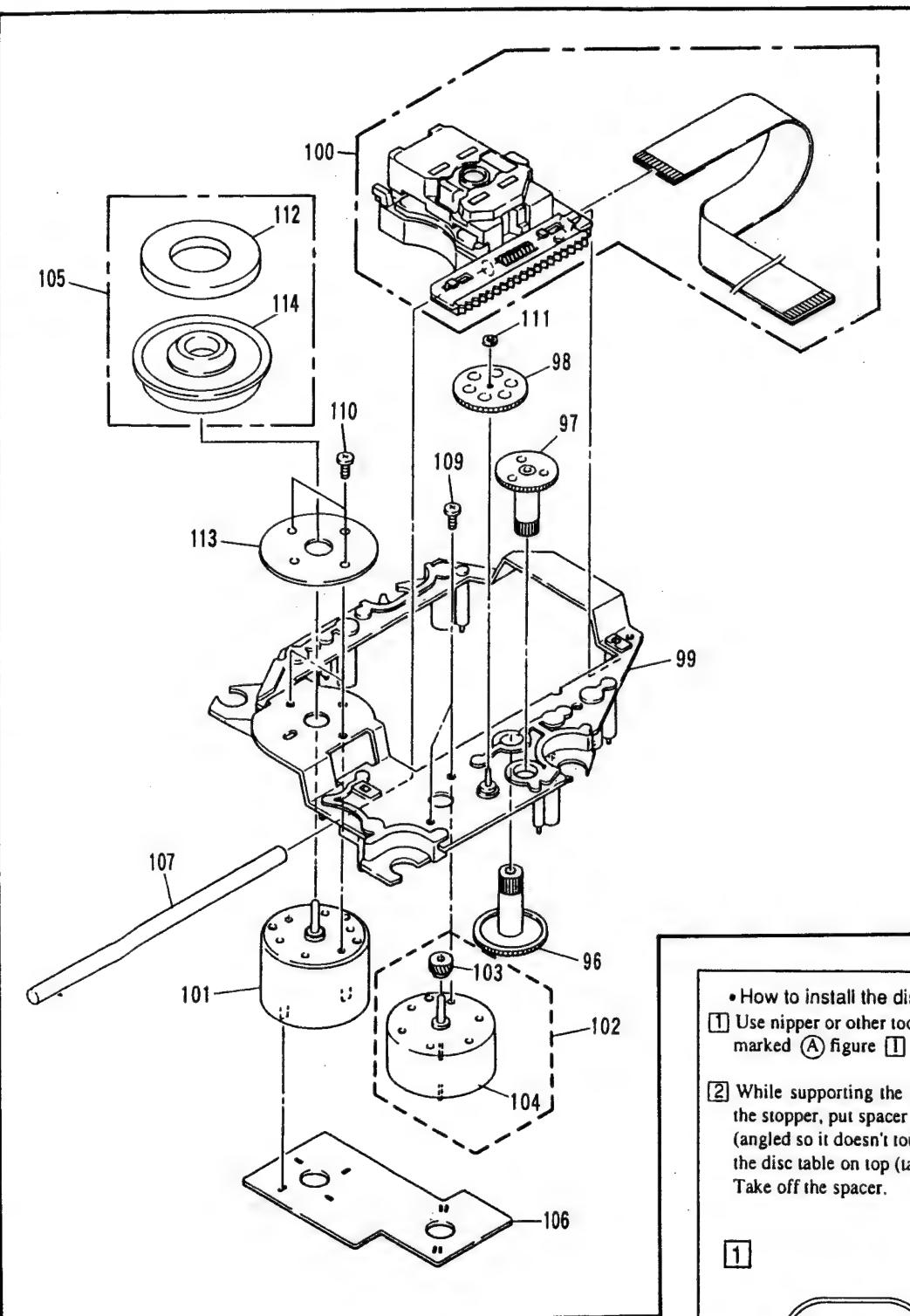
A

B

C

D

## ● EXTERIOR (2/2) (Servo Mechanism Assy B)



## Parts List of Exterior (2/2)

Mark	No.	Description	Parts No.
A	96	GEAR 1 (POM)	PNW2052
	97	GEAR 2 (POM)	PNW2053
	98	GEAR 3 (POM)	PNW2054
	99	CARRIDGE BASE (FE)	PNW2445
	100	PICK UP ASS'Y	PEA1319
NSP	101	D.C. MOTOR ASSY (SPINDLE)	PEA1235
	102	D.C. MOTOR ASSY (CARRIAGE)	PEA1246
	103	PINION GEAR (POM)	PNW2055
	104	DC MOTOR	PXM1027
	105	DISC TABLE ASS'Y	PEA1314
NSP	106	MECHANISM BOARD ASSY	PWX1192
	107	GUIDE BAR (STEEL)	PLA1094
	108	SCREW	JFZ17P025FZK
	109	SCREW	JFZ20P040FMC
B	111	WASHER	WT12D032D025
	112	CLAMP MAGNET	PMF1014
NSP	113	YOKE M	PNB1312
NSP	114	DISC TABLE	PNW2410

## 6. PCB PARTS LIST

### NOTES :

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

$560\Omega \rightarrow 56 \times 10^1 \rightarrow 561$  ..... RD1/8PM 5 6 1 J

$47k\Omega \rightarrow 47 \times 10^3 \rightarrow 473$  ..... RD1/4PS 4 7 3 J

$0.5\Omega \rightarrow 0R5$  ..... RN2H 0 R 5 K

$1\Omega \rightarrow 010$  ..... RS1P 0 1 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

$5.62k\Omega \rightarrow 562 \times 10^3 \rightarrow 5621$  ..... RM1/4PC 5 6 2 1 F

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
<b>LIST OF ASSEMBLIES</b>							
$\Delta$	MOTHER BOARD ASSY		PWM1975		Q405	DIGITAL TRANSISTOR	DTC124EK
NSP	MAIN BOARD ASSY		PWZ3077		D391-397	DIODE	1SS133X
	OUTPUT BOARD ASSY		PWZ3080				
NSP	I/O CONNECTOR BOARD ASSY		PWX1390	<b>SWITCHES AND RELAYS</b>			PSG1006
NSP $\Delta$	SUB BOARD ASSY		PWX1419	S301	SWITCH		
NSP	POWER BOARD ASSY		PWZ3065				
NSP	DISPLAY BOARD ASSY		PWZ3068	<b>COILS AND FILTERS</b>			
NSP	SWITCH BOARD ASSY		PWZ3070	L351	RADIAL INDUCTOR		LFA820K
NSP	ESCUTCHEON BOARD ASSY		PWZ3072				
NSP	JOINT BOARD ASSY		PWZ3074	<b>CAPACITORS</b>			
NSP	RACK BASE ASSY		PXA1572	C152, 153	ELECT. CAPACITOR		CEA\\$101M10
NSP	RACK BOARD ASSY		PWX1340	C155	CERAMIC CAPACITOR		CKSQ\\$YB182K50
NSP	RACK BOARD A ASSY		PWZ2779	C156	CERAMIC CAPACITOR		CKSQ\\$YB333K25
NSP	RACK BOARD B ASSY		PWZ2781	C157	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	C158, 159			C158, 159	CERAMIC CAPACITOR		CKSQ\\$YB104K25
NSP	LOADING MECHANISM ASSY		PXA1571	C160	ELECT. CAPACITOR		CEA\\$4R7M50
NSP	LOADING MECHANISM BOARD ASSY		PWX1422	C161	CERAMIC CAPACITOR		CKSQ\\$YB104K25
NSP	MECHA BOARD ASSY		PWZ2776	C162	ELECT. CAPACITOR		CEA\\$4R7M50
NSP	SENSOR BOARD ASSY		PWZ2777	C163	CERAMIC CAPACITOR		CKSQ\\$YB104K25
NSP	LOADING BOARD ASSY		PWZ2778	C164, 167	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	SELECT MOTOR BOARD ASSY		PWZ2782	C168	CERAMIC CAPACITOR		CKSQ\\$YB333K25
NSP	LOADING MOTOR BOARD ASSY		PWZ2783	C169	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	C170			C170	CERAMIC CAPACITOR		CKSQ\\$YB332K50
NSP	C171, 172			C171, 172	CERAMIC CAPACITOR		CKSQ\\$YB472K50
NSP	C205			C205	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	SERVO MECHANISM ASSY B		PXA1539	C208, 209	ELECT. CAPACITOR		CEA\\$330M16
NSP	MECHANISM BOARD ASSY		PWX1192	C210, 215	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	C218, 219			C218, 219	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	C225, 230			C225, 230	CERAMIC CAPACITOR		CKSQ\\$YB103K50
NSP	C301, 302			C301, 302	ELECT. CAPACITOR		CEA\\$330M16
<b>MAIN BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
$\Delta$	IC151	SERVO IC	CXA1372Q	C303	CERAMIC CAPACITOR		CKSQ\\$YB104K25
$\Delta$	IC201, 202	POWER OP-AMP IC	LA6520	C304, 305	CERAMIC CAPACITOR		CKSQ\\$YF104Z25
$\Delta$	IC203	POWER OP-AMP IC	LA6517	C306	CERAMIC CAPACITOR		CKSQ\\$YB152K50
$\Delta$	IC301	EFM DEMODULATION IC	CXD2500BQ	C307	CERAMIC CAPACITOR		CKSQ\\$YB473K25
$\Delta$	IC351	MICROCOMPUTER, IC	PD3315A	C308	CERAMIC CAPACITOR		CKSQ\\$YB103K50
	IC401	D/A CONVERTER IC	PD2026B(L)	C309	ELECT. CAPACITOR		CEA\\$4R7M50
	IC405	IC	NJM4558M	C351	ELECT. CAPACITOR		CEA\\$331M6R3
	Q322	DIGITAL TRANSISTOR	DTC124EK	C352, 353	CHIP CAPACITOR		CKSQ\\$YF103Z50
	Q391	CHIP TRANSISTOR	2SC2412K	C354	CHIP CAPACITOR		CCS\\$CH101J50
	Q403, 404	TRANSISTOR	2SD2114K	C355, 361	CHIP CAPACITOR		CKSQ\\$YF103Z50
				C367	CHIP CAPACITOR		CKSQ\\$YF103Z50
				C393	CHIP CAPACITOR		CCS\\$CH101J50
				C401	ELECT. CAPACITOR		CEA\\$330M16
				C403	CHIP CAPACITOR		CCS\\$CH120J50
				C404	CHIP CERAMIC C.		CCS\\$CH220J50

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
C406, 410		CERAMIC CAPACITOR	CKSQYF104Z25				
C413		AUDIO FILM CAPACITOR	CFTYA104J50				
C414		CERAMIC CAPACITOR	CKSQYF104Z25				
C415, 416		AUDIO FILM CAPACITOR	CFTYA104J50				
C421		AUDIO FILM CAPACITOR	CFTYA104J50				
C423, 424		CERAMIC CAPACITOR	CKSQYF104Z25				
C429, 430		CHIP CAPACITOR	CCSQCH390J50				
C431, 432		ELECT. CAPACITOR	CEAS330M16				
C433, 434		ELECT. CAPACITOR	CEAS220M25				
C435-438		CHIP CAPACITOR	CCSQCH050C50				
C461		CHIP CAPACITOR	CKSQYF103Z50				
C71-74		ELECT. CAPACITOR	CEAS330M16				
C75-79		CERAMIC CAPACITOR	CKSQYF104Z25				
<b>RESISTORS</b>							
VR151, 152		VR(22k)	RCP1084				
R439-442		CHIP METAL OXIDE RESISTOR	RN1/10SE104D				
		OTHER RESISTORS	RS1/10S□□□J				
<b>OTHERS</b>							
CN11		12P JUMPER CONNECTOR	52147-1210				
CN201		JACK 6P	VKN-004				
CN202		22P CONNECTOR	52044-2245				
CN203		CONNECTOR 5P	173981-5				
CN351		CONNECTOR 28P	9604S-28C				
CN352		3P JUMPER CONNECTOR	52147-0310				
CN353		9P JUMPER CONNECTOR	52147-0910				
X351		CERAMIC RESONATOR	VSS1031				
X401		XTAL RES (OSC)	PSS1008				
<b>OUTPUT BOARD ASSY</b>							
<b>COILS AND FILTERS</b>							
L391		RADIAL INDUCTOR	LFA010K				
L395, 396		RADIAL INDUCTOR	LFA010K				
<b>CAPACITORS</b>							
C388, 389		CERAMIC CAPACITOR	CKSQYB104K25				
C397		CERAMIC CAPACITOR	CCCCH470J50				
C398		CERAMIC CAPACITOR	CGCYX104K25				
C399		CERAMIC CAPACITOR	CCCCH470J50				
C441, 442		AUDIO FILM CAPACITOR	CFTXA152J50				
<b>OTHERS</b>							
JA391, 392		JACK	RKN1004				
JA393		JACK	PKN1005				
JA401		JACK	PKB1009				
<b>I/O CONNECTOR BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
D1301-1314		DIODE	1SS254				
<b>CAPACITORS</b>							
C1301-1305		AXIAL CAPACITOR	CKPUYB101K50				
C1306-1308		CERAMIC CAPACITOR	CKPUYF103Z25				
<b>RESISTORS</b>							
		ALL RESISTORS	RD1/6PM□□□J				
<b>OTHERS</b>							
JA394		CONNECTOR	PKP-038				
<b>POWER BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
△ IC21		REGULATOR, IC	PQ05RR12				
△ IC22		REGULATOR IC	NJM79L05A				
△ D11-14		DIODE	11ES2				
△ D52		DIODE	11ES2				
△ D54		ZENER DIODE	MTZJ18B/C				
<b>CAPACITORS</b>							
C11, 13		CERAMIC CAPACITOR	CKCYF103Z50				
C15-17		CERAMIC CAPACITOR	CKCYF103Z50				
C25		ELECT. CAPACITOR	CEAS472M16				
C26		ELECT. CAPACITOR	CEAS102M16				
C27		ELECT. CAPACITOR	CEAS471M6R3				
C28		ELECT. CAPACITOR	CEAS101M10				
C52		ELECT. CAPACITOR	CEAS101M35				
<b>RESISTORS</b>							
R22		CARBON FILM RESISTOR	RD1/6PM103J				
R51		CARBON FILM RESISTOR	RD1/6PM103J				
R52-54		CARBON FILM RESISTOR	RD1/6PM152J				
<b>TRANSFORMER</b>							
△		POWER TRANSFOMER	PTT1297				
<b>OTHERS</b>							
△		TERMINAL	RKC-061				
<b>DISPLAY BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
D703, 704		DIODE	1SS254				
<b>SWITCHES AND RELAYS</b>							
S703, 707		SWITCH	PSG1006				
S708, 711		SWITCH	PSG1006				
S712, 715		SWITCH	PSG1006				
S716		SWITCH	PSG1006				
<b>RESISTORS</b>							
R701-704		CARBON FILM RESISTOR	RD1/6PM103J				
<b>OTHERS</b>							
CN701		CONNECTOR 28P	9604S-28F				
V701		FL TUBE	PEL1079				
<b>SWITCH BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
D701, 702		DIODE	1SS254				
<b>SWITCHES AND RELAYS</b>							
S701, 702		SWITCH	PSG1006				
S709, 710		SWITCH	PSG1006				
S713, 714		SWITCH	PSG1006				
<b>OTHERS</b>							
		REMOTE SENSOR	SBX1785				

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
<b>ESCUTCHEON BOARD ASSY</b>							
SEMICONDUCTORS				LOADING BOARD ASSY			
D801	LED		SEL6210S-TS	SWITCHES AND RELAYS			
RESISTORS				REAF SWITCH			VSK1011
R801	CARBON FILM RESISTOR		RD1/6PM331J	OTHERS			
OTHERS				CN641	CONNECTOR 3P		4-173979-3
CN801 J802	3PJUMPER CONNECTOR CONNECTOR ASS'Y		52151-0310 PDE1250	SELECT MOTOR BOARD ASSY			
<b>JOINT BOARD ASSY</b>							
OTHERS				OTHERS			
CN751, 752	CONNECTOR 28P		9604S-28F	J627	CONNECTOR ASS'Y 2P		PDE1244
<b>RACK BOARD A ASSY</b>							
SWITCHES AND RELAYS				LOADING MOTOR BOARD ASSY			
S651, 652	PUSH SWITCH		DSG1015	OTHERS			
OTHERS				J624	CONNECTOR ASS'Y 2P		PDE1245
CN651	CONNECTOR 5P		VKN1062	MECHANISM BOARD ASSY			
<b>RACK BOARD B ASSY</b>							
SWITCHES AND RELAYS				SWITCHES AND RELAYS			
S653, 654	PUSH SWITCH		DSG1015	S610	PUSH SWITCH		DSG1016
<b>MECHA BOARD ASSY</b>				OTHERS			
OTHERS				CN610	CONNECTOR 4P		173979-4
CN621	CONNECTOR		12FMZ-ABT				
CN622	CONNECTOR 3P		4-173979-3				
CN623	CONNECTOR 4P		173979-4				
CN624	CONNECTOR 3P		6-173979-3				
CN625	CONNECTOR 22P		SLEM22R-2				
CN626	CONNECTOR 3P		6-173979-4				
CN627	CONNECTOR 3P		173979-3				
<b>SENSOR BOARD ASSY</b>							
SEMICONDUCTORS							
Q631	PHOTO-INTERRUPTER		GP1A53HR				
<b>SWITCHES AND RELAYS</b>							
S631	PUSH SWITCH		DSG1016				
RESISTORS							
R631	CARBON FILM RESISTOR		RD1/6PM471J				
OTHERS							
CN631	CONNECTOR 3P		6-173979-4				

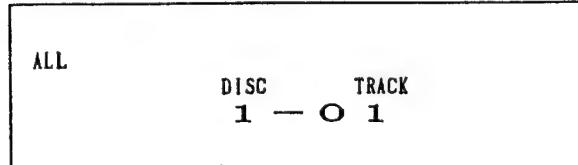
## 7. OPERATING DESCRIPTION

### 7.1 POWER SUPPLY RECEPTACLE ON

When the mechanism is not at the home position when the power supply receptacle is switched ON, it will return to the home position, the mechanism will be clamped and stop will be executed with the following display.

The normal play mode will be <ALL> mode when no mode specification has been made.

Receptacle ON (DISC Display)



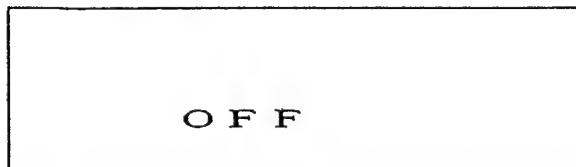
### 7.2 POWER ON/OFF (Product, Remote Control)

#### 1. POWER-OFF

1. When the <POWER ON/OFF> key is pressed at the time of POWER ON, the entire FL will go out, and power OFF condition will be reached.
2. Except for the <POWER ON/OFF> key, all other keys are disabled during POWER OFF.
3. When the <POWER ON/OFF> key is pressed during PLAY, during SEARCH, etc., the operation will be stopped, the disc will be stored, the mechanism will return to the home position, clamping will be executed, and then the power will be switched OFF.

At this time, "OFF" is displayed at the 7-segment display to indicate that POWER-OFF is being executed.

During POWER-OFF



4. The play mode, the program, the customer, and the last disc are kept even when POWER OFF is executed.

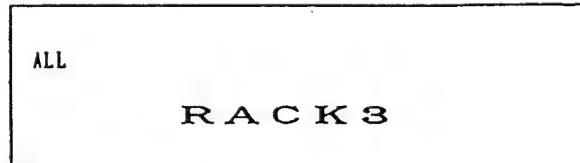
### 2. POWER-ON

1. When the <POWER ON/OFF> key is pressed at the time of POWER OFF, the FL will light, and all keys will be enabled.
2. The disc No. at the time of POWER OFF will be displayed, and when then the <PLAY> key is pressed, that disc will be searched and played. (Last Disc Memory specifications)
3. When the <TRACK-BACK> key is pressed within 1 sec. after POWER-ON, the business demonstration display will be started. When a key is pressed or the door is opened, the demonstration will stop, and the display returns to the original display mode.

### 7.3 DOOR AND ROLLING RACK OPEN

1. As play operation is continued even when the door is opened, disc exchange is possible even during playback, but as the rolling rack with the mechanism behind it can not be tilted, the discs in that rack can not be exchanged.
2. While the door is open, the number of the rolling rack which can not be tilted is displayed on the 7-segment display. (Only "RACK" is displayed when all racks can be tilted.)

With open door



(The number of the rack which can not be tilted is shown.)

3. When the door is opened during selection or loading the operation will be interrupted temporarily. The operation will be started again after confirmation that the door has been closed. Accordingly, when the <PLAY> key or the <RANDOM> key is pressed while the door and the rolling rack is open, play operation will not begin. Play will be started after confirmation that the door has been closed.
4. When a rolling rack is tilted, the disc existence information for that part, the program write information, and the random erasure information are cleared. (The customer writing information is not cleared.) When at this time all written information is cleared in <PROGRAM> mode, <ALL> mode will be entered.

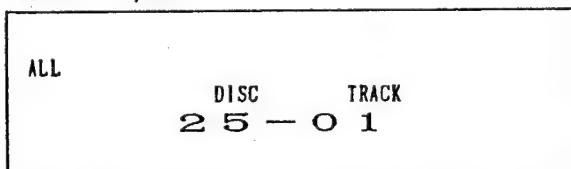
## 7.4 PAUSE (Product, Remote Control)

- When the <PAUSE> key is pressed during play, the PAUSE segment will light and pause will be executed at that location.  
When the <PAUSE> key is pressed during search, pause will be executed at the search completion address.
- When skip title selection is executed in pause condition, pause will be executed at the search completion address.
- Pause is cancelled with the <PAUSE> key or the <PLAY> key.

## 7.5 STOP (Last Disc Memory specification) (Product, Remote Control)

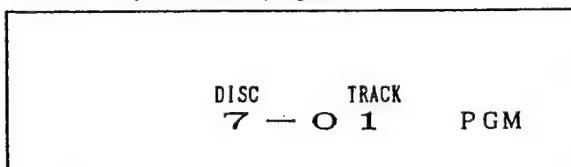
- When the <STOP> key is pressed during play, the number of the disc played immediately before will be displayed, the disc will be stored, the mechanism will return to the home position, clamping will be executed and stop condition will be reached.
- When the <PLAY> key is pressed again, the previously played disc will be searched and played (Last Disc Memory).  
When a program has been set up, the number of the first disc in the program will be displayed, and when then the <PLAY> key is pressed, play will start from that disc.

<STOP> key ON



(The number of the disc played immediately before is shown.)

<STOP> key ON (with a program)



(The number of the first disc of the program is shown.)

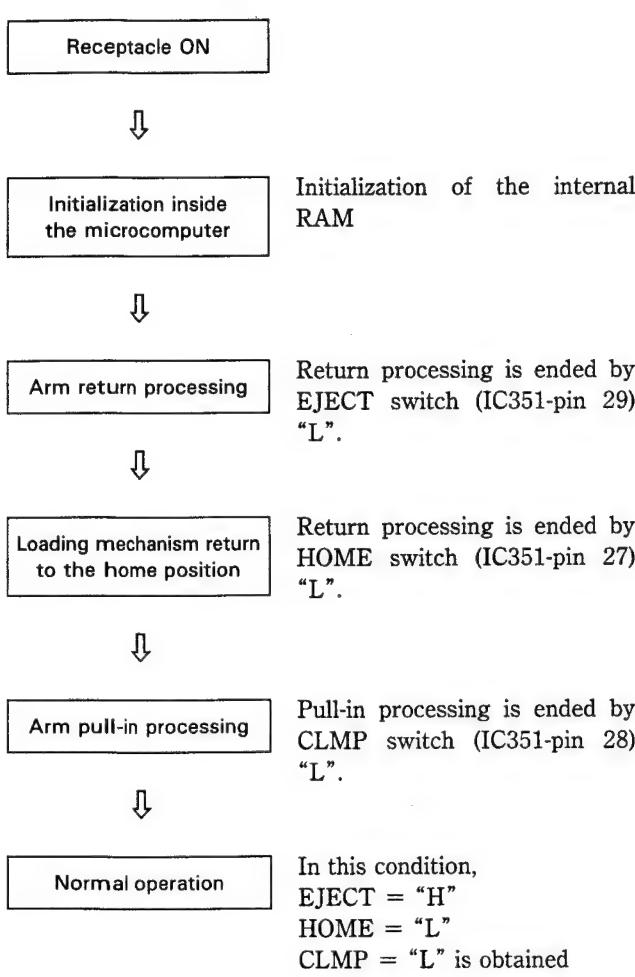
- Last Disc Memory applies for all modes, <ALL>, <SINGLE>, and <CUSTOM>. (However, this applies only for normal play.)
- When the <STOP> key is pressed during repeat or pause ON, repeat or pause also will be cancelled.  
When the <STOP> key is pressed during stop in <PROGRAM> mode, <PROGRAM> mode will be cancelled (when a program has been written, this also will be cleared), and <ALL> mode will be entered.

## 7.6 LIST OF FL DISPLAY CHARACTERS

Display	Contents
OFF	Displayed after the POWER key has been pressed until standby status has been reached.
RACK *	Displayed when the door or the rack is open. * shows the number of the rack where the mechanism is (number of the rack which can not be opened).
RACK	When no number is shown, the mechanism is at the home position. All racks can be opened.
25 - no	Displayed when there has been no disc (Example: No 25th disc).
End	Displayed when manual search has been executed to the last disc.
PAUSE	Displayed when PAUSE PGM has been entered by PGM input.
P - **	Display of the entered PGM step when the TOTAL display has been set in PGM mode.
C1 - **	Displayed at the time of confirmation of the disc entered in custom mode. (C1 at the time of custom 1 check)

## 7.7 OPERATION FLOWCHART

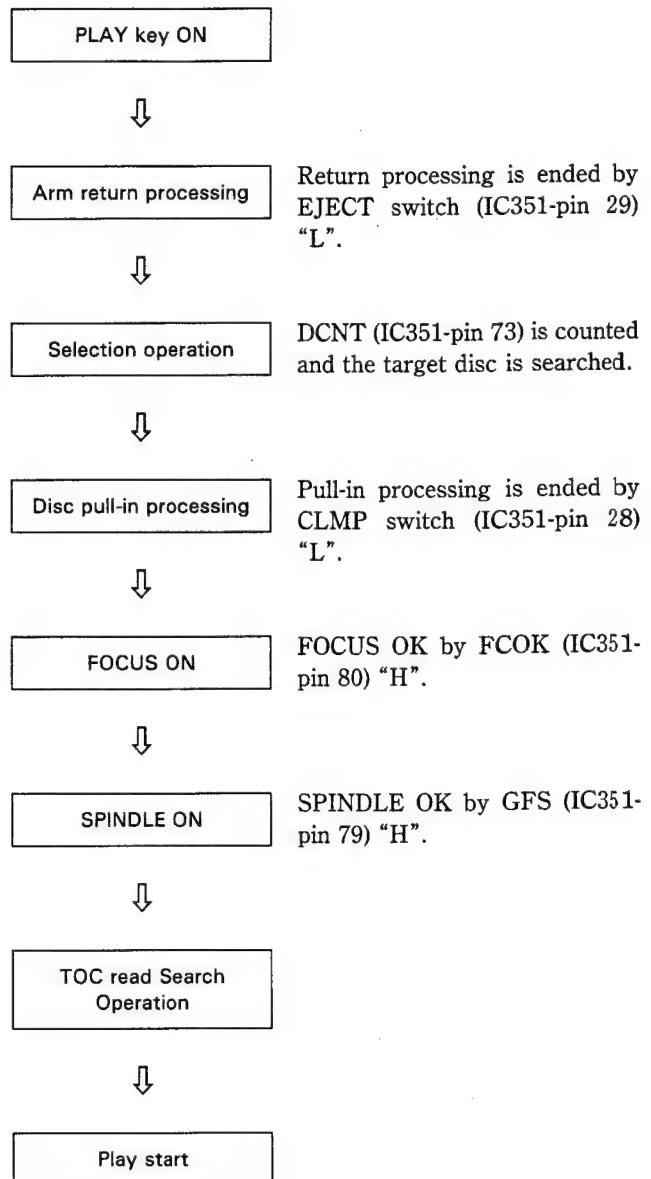
### 1. Sequence at the time of Receptacle ON



Afterwards, selection and playing is executed by input of the PLAY key etc.

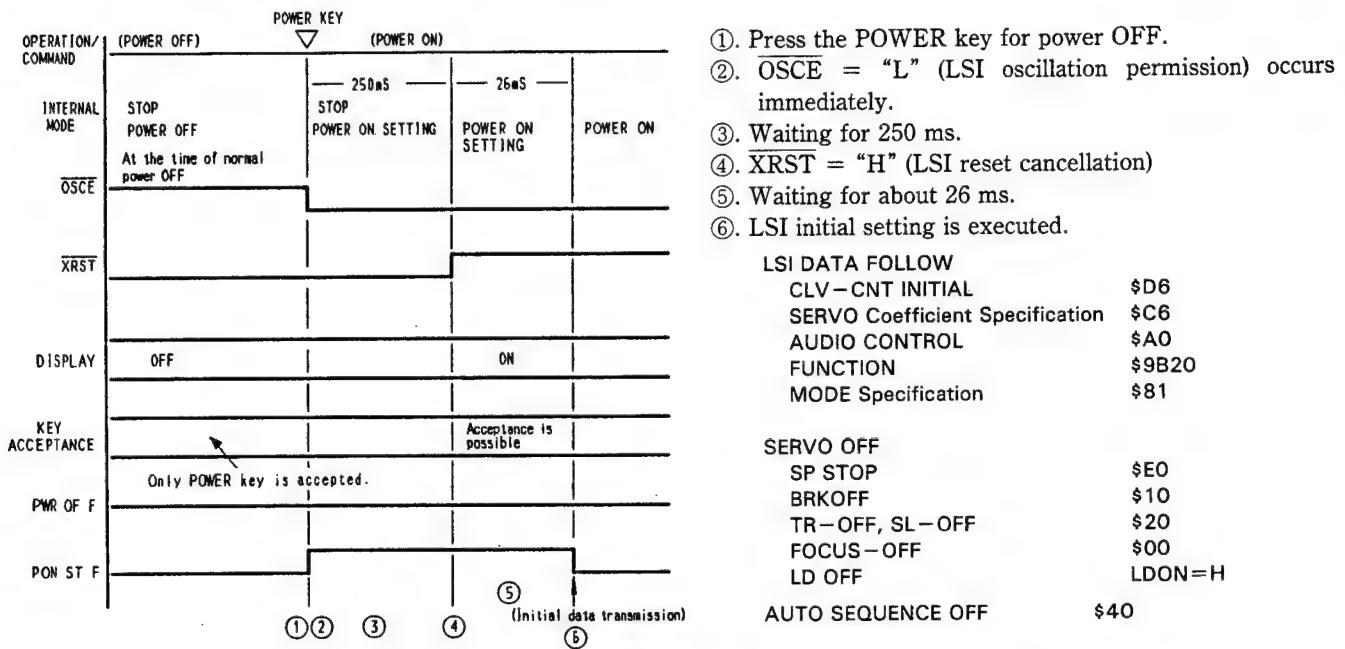
In case of NG for an operation, stop is executed at the respective position if the operation is not completed after several retries.

### 2. Sequence at the time of Setup (from Mechanism Home Position Standby)

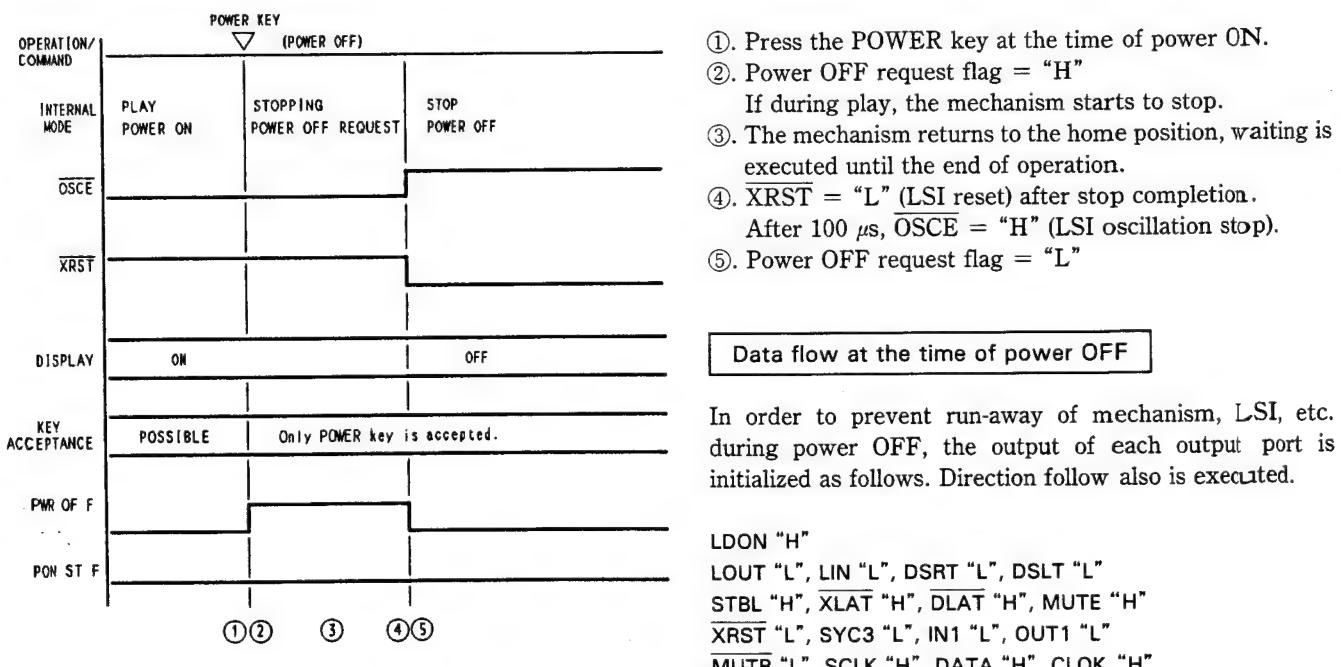


### 3. Power ON/OFF Sequence

#### 1. OSCE, XRST timing and operation flags at the time of power OFF → power ON



#### 2. OSCE, XRST timing and operation flags at the time of power ON → power OFF



## 8. ADJUSTMENTS

### ■ Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

### ● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1–4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin5 (FCS. IN) TP1, Pin6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin3 (TRK. IN) TP1, Pin2 (TRK. ERR)	VR151 (TRK. GAN)

### ● Abbreviation Table

FCS. ERR : Focus Error

TRK. ERR : Tracking Error

FCS. GAN : Focus Gain

TRK. GAN : Tracking Gain

FCS. IN : Focus In

TRK. IN : Tracking In

### ● Measuring Instruments and Tools

1. Dual trace oscilloscope (10 : 1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low pass filter ( $39k\Omega + 0.001\mu F$ )
5. Resistor ( $100k\Omega$ )
6. 8cm disc (With at least about 20 minutes of recording)
7. Ball point hexagon wrench (GGK1002)
8. Standard tools

### ● Test Point and Adjustment Variable Resistor Positions

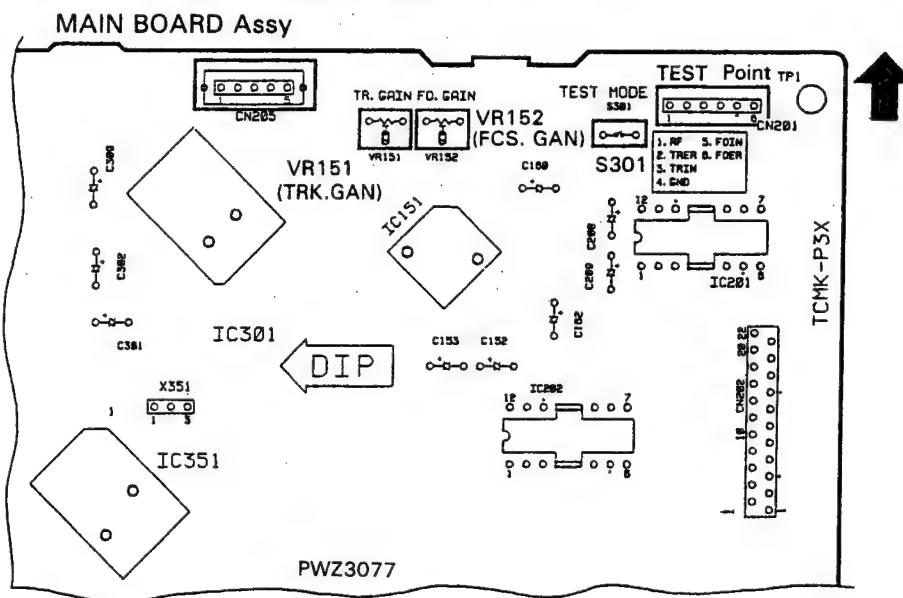


Fig. 1 Adjustment Location

### ● Notes

1. Use a 10 : 1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10 : 1 probe is used.

### ● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

#### [Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Push the test mode switch (S301). (See Fig. 1)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1–3.

**[Release from test mode]**

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

**[Operations of the keys in test mode]**

Code	Key Name	Function in Test Mode	Explanation
	MODE	Closes focus servo after the disc is clamped.	<p>After the first disc is clamped, the laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc.</p> <p>With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.</p>
▶	PLAY	Spindle servo ON	<p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>
■■	PAUSE	Tracking servo close/open	<p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p>

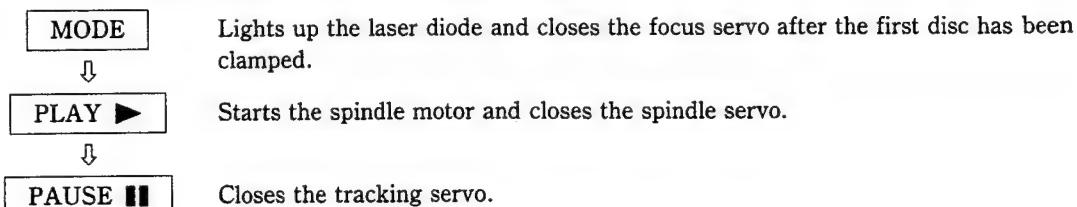
Code	Key Name	Function in Test Mode	Explanation
◀◀ . ◀◀	TRACK/ MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▶▶ . ▶▶	TRACK/ MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
■	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed. After this, return the disc to the rack and the mechanism back to its original position.

Note: Use the first disc in the test mode. (Other discs cannot be selected.)

#### [How to playback a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



Wait at least 2–3 seconds between each of these operations.

## 1. Focus Offset Verification

● Objective	Verify the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement Instrument Connections	Connect the oscilloscope to TP1, Pin6 (FCS. ERR)  [Settings] 5mV/division 10ms/division DC mode	● Player State  ● Adjustment Location  ● Disc	Test mode, stopped (just the Power switch on)  None  None needed
<b>[Procedure]</b> Verify the DC voltage at TP1, Pin6 (FCS. ERR) is $0 \pm 50\text{mV}$ .			

*Note: If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1–4, the pickup block may be defective.*

## 2. Tracking Error Balance Verification

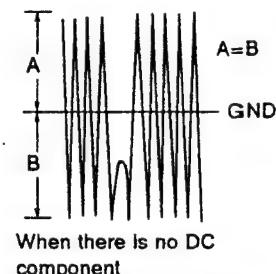
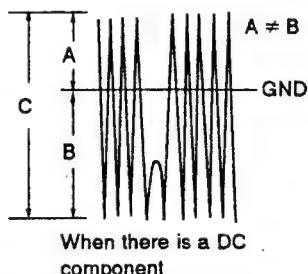
● Objective	To verify that there is no variation in the sensitivity of the tracking photo diode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement Instrument Connections	Connect the oscilloscope to TP1, Pin2 (TRK. ERR). This connection may be via a low pass filter.  [Settings] 50mV/division 5ms/division DC mode	● Player State  ● Adjustment Location  ● Disc	Test mode, focus and spindle servos closed and tracking servo open.  None  YEDS-7

### [Procedure]

1. Move the pickup to midway across the disc ( $R=35\text{mm}$ ) with the TRACK/MANUAL SEARCH FWD  $\blacktriangleright\blacktriangleright\bullet\blacktriangleright\blacktriangleright$  key or REV  $\blacktriangleleft\blacktriangleleft\bullet\blacktriangleleft\blacktriangleleft$  key.
2. Press the MODE key, then the PLAY  $\blacktriangleright$  key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin2 (TRK. ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

$$\text{When } A \geq B, \frac{A-B}{C} \times \frac{1}{2} \leq 0.1$$

$$\text{When } A < B, \frac{B-A}{C} \times \frac{1}{2} \leq 0.1$$



### 3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement Instrument Connections	<p>Connect the oscilloscope to TP1, Pin1 (RF).</p> <p>[Settings] 20mV/division 200ns/division AC mode</p>	<ul style="list-style-type: none"> <li>● Player State</li> <li>● Adjustment Location</li> <li>● Disc</li> </ul>	<p>Test mode, play</p> <p>Pickup radial tilt adjustment screw and tangential tilt adjustment screw</p> <p>8 cm disc [However, those with approx. 20 min of audio signal (music).]</p>

#### [Procedure]

1. Press the TRACK/MANUAL SEARCH FWD  $\blacktriangleright\blacktriangleright\bullet\blacktriangleright\blacktriangleright$  key or REV  $\blacktriangleleft\blacktriangleleft\bullet\blacktriangleleft\blacktriangleleft$  key to move the pickup to the external circumference of the disc.  
Press the MODE key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\blacksquare\blacksquare$  key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with the hexagon wrench (GGK1002) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with the hexagon wrench (GGK1002) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Fig. 3).  
※ The ball-point type hexagonal wrench is used because the disc will get in the way if a normal hexagonal wrench is used.
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note: Radial and tangential mean the directions relative to the disc shown in Fig. 2.

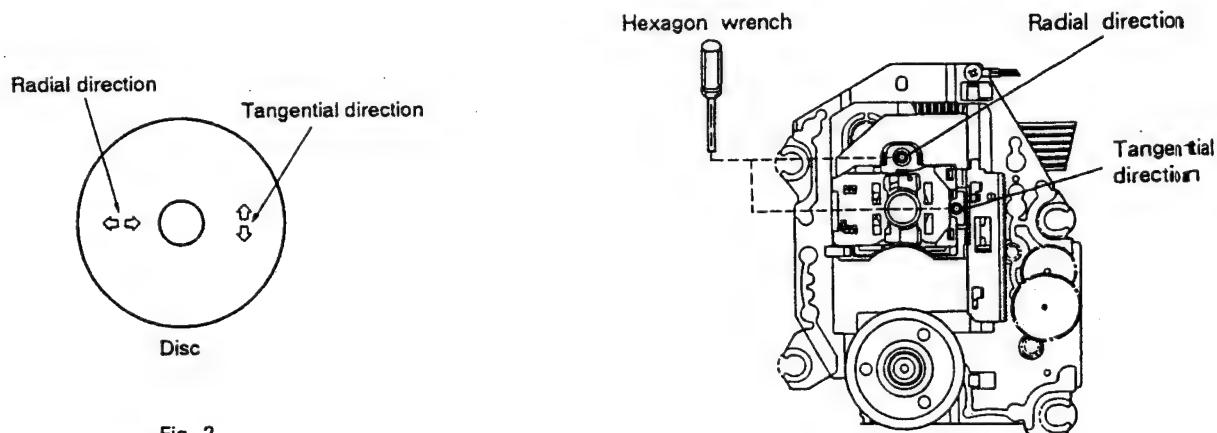


Fig. 2

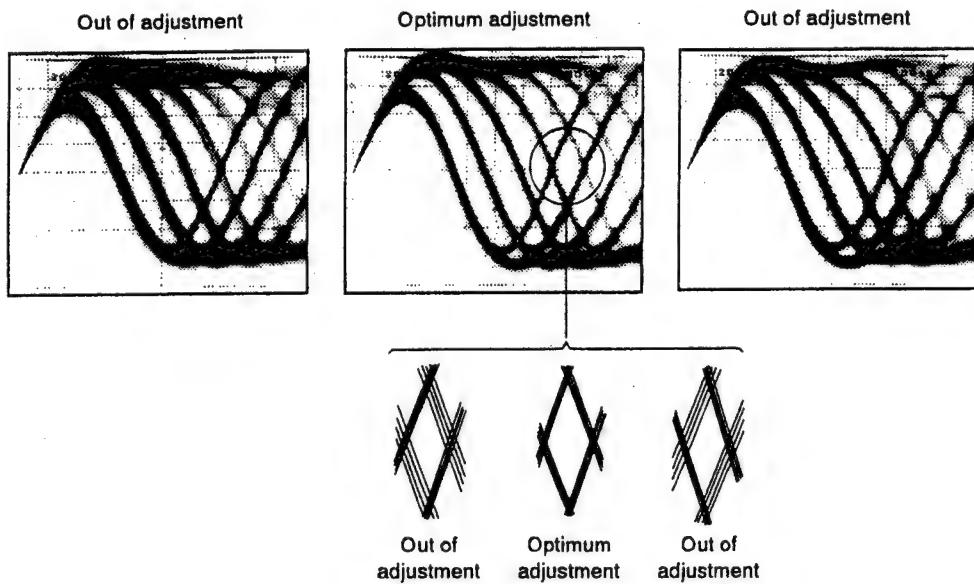


Fig. 3 Eye Pattern

#### 4. RF Level Verification

<ul style="list-style-type: none"> <li>● Objective</li> </ul>	To verify the playback RF signal amplitude.		
<ul style="list-style-type: none"> <li>● Symptom when out of adjustment</li> </ul>	No play or no search		
<ul style="list-style-type: none"> <li>● Measurement Instrument Connections</li> </ul>	Connect the oscilloscope to TP1, Pin1 (RF). [Settings] 50mV/division 10ms/division AC mode	<ul style="list-style-type: none"> <li>● Player State</li> <li>● Adjustment Location</li> <li>● Disc</li> </ul>	Test mode, play None YEDS-7

##### [Procedure]

1. Move the pickup to midway across the disc ( $R=35\text{mm}$ ) with the TRACK/MANUAL SEARCH FWD  $\blacktriangleright\blacktriangleright\bullet\blacktriangleright\blacktriangleright$  key or REV  $\blacktriangleleft\blacktriangleleft\bullet\blacktriangleleft\blacktriangleleft$  key, then press the MODE key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\blacksquare\blacksquare$  key in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is  $1.2\text{Vp-p}\pm0.2\text{V}$ .

## 5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement Instrument Connections	See Fig. 4. [Settings] CH1 20mV/division X-Y mode CH2 5mV/division	● Player State [Settings] VR152 (FCS. GAN) YEDS-7	Test mode, play
	● Adjustment Location Disc		

### [Procedure]

1. Set the AF generator output to 1.2kHz and 1Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD  $\blacktriangleright\blacktriangleright$  key or REV  $\blacktriangleleft\blacktriangleleft$  key to move the pickup to halfway across the disc ( $R=35mm$ ), then press the MODE key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\blacksquare$  key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

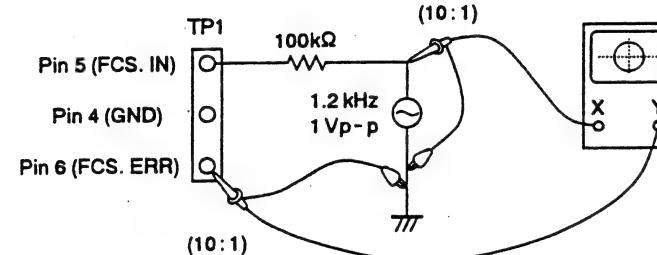
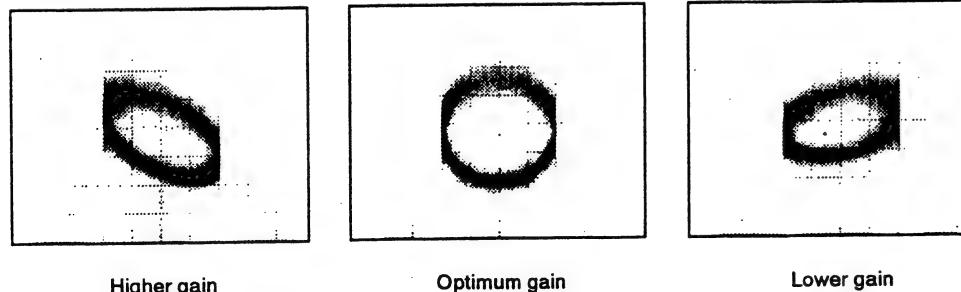


Fig. 4

### Focus Gain Adjustment



## 6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement Instrument Connections	See Fig. 5. [Settings] CH1 50mV/division X-Y mode CH2 20mV/division	● Player State [Settings] VR151 (TRK. GAN) YEDS-7	Test mode, play
	● Adjustment Location Disc		

### [Procedure]

1. Set the AF generator output to 1.2kHz and 2Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD  $\blacktriangleright\blacktriangleright$  key or REV  $\blacktriangleleft\blacktriangleleft$  key to move the pickup to halfway across the disc ( $R=35mm$ ), then press the MODE key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\blacksquare$  key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

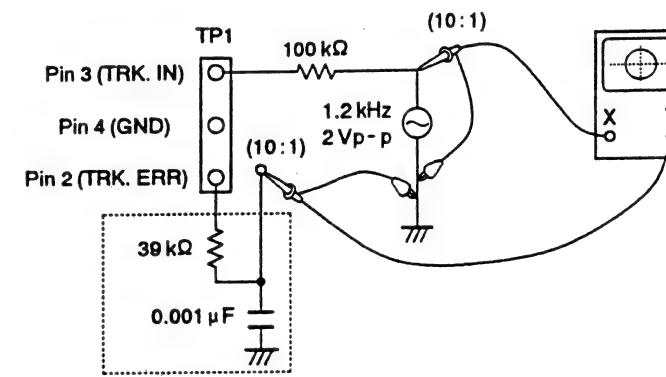
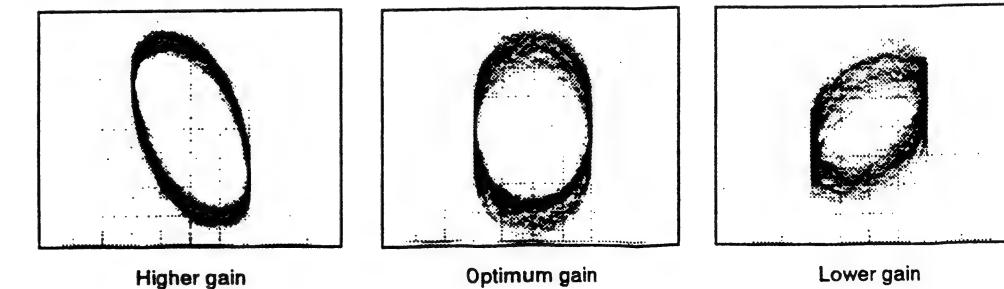


Fig. 5

### Tracking Gain Adjustment



## 9. SCHEMATIC AND PCB CONNECTION DIAGRAMS

### 9.1 MECHA BOARD ASSY, SENSOR BOARD ASSY, LOADING BOARD ASSY, SELECT MOTOR BOARD ASSY, LOADING MOTOR BOARD ASSY AND MECHANISM BOARD ASSY

#### A NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

- When ordering service parts, be sure to refer to "PARTS LIST OF EXPLODED VIEWS" or "PCB PARTS LIST".
- Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

**3. RESISTORS:**  
Unit: kΩ, MΩ, or Ω unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

**4. CAPACITORS:**  
Unit: pF or μF unless otherwise noted.  
Ratings: capacitor (μF), voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

**5. COILS:**  
Unit: mH or μH unless otherwise noted.

**6. VOLTAGE AND CURRENT:**  
DC voltage (V) in PLAY mode unless otherwise noted.  
mA or mA:  
DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

**7. OTHERS:**  
• : Adjusting point.  
• : Measurement point.  
• The mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

**8. SCH—□ ON THE SCHEMATIC DIAGRAM:**  
• SCH—□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

**9. SWITCHES (Underline indicates switch position):**

MECHANISM BOARD ASSY  
S610 INSIDE SW

MAIN BOARD ASSY  
S301 TEST MODE

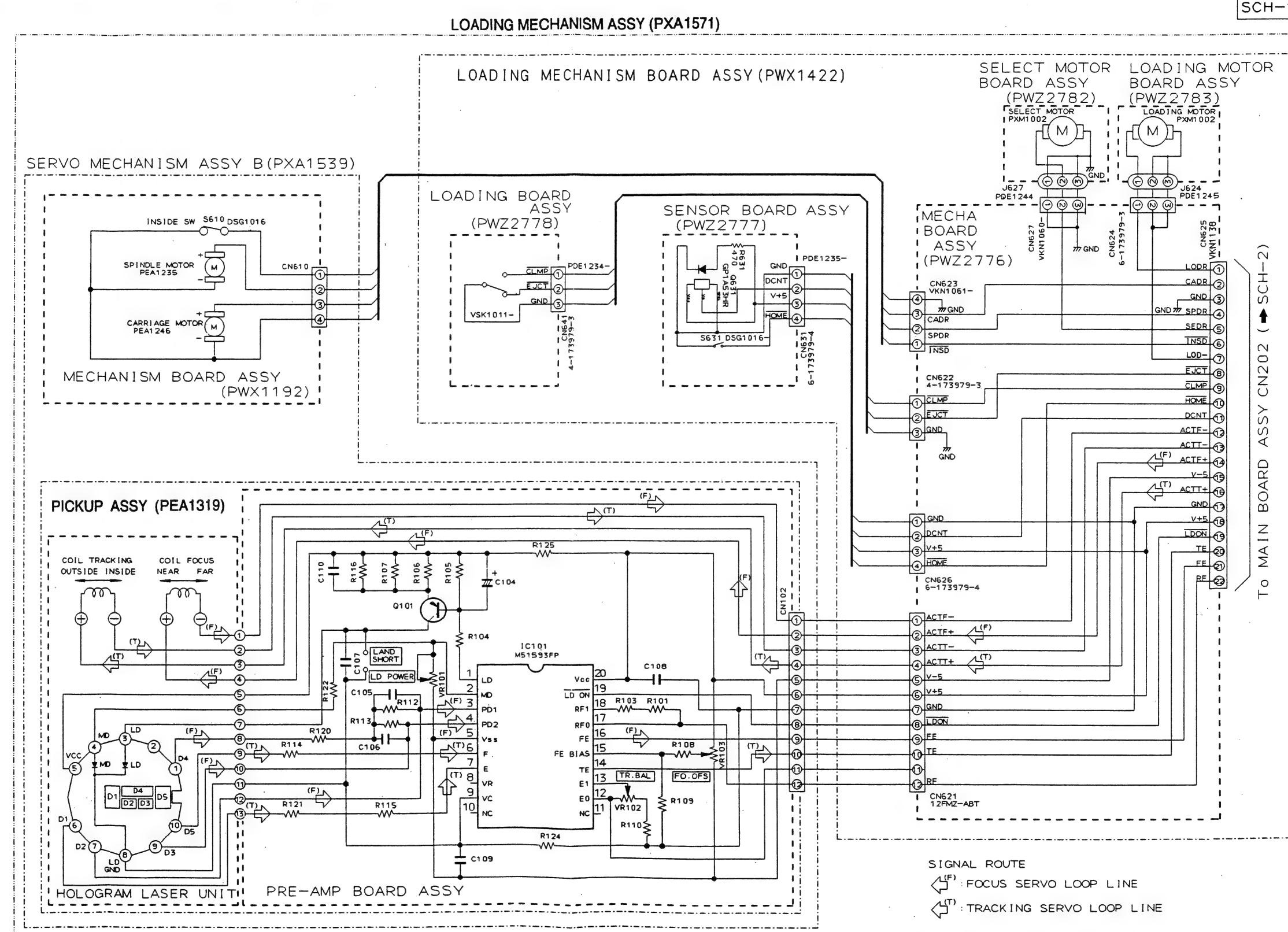
DISPLAY BOARD ASSY  
S703 PAUSE  
S708 DISC NUMBER —  
S711 MODE  
S712 STOP  
S715 PLAY  
S716 DISC NUMBER +

SWITCH BOARD ASSY  
S701 RANDOM  
S702 POWER  
S709 MODE  
S710 CLEAR  
S713 ADLC  
S714 TIME

SENSOR BOARD ASSY  
S631 HOME

RACK BOARD A ASSY  
S651 EJECT  
S652 EJECT

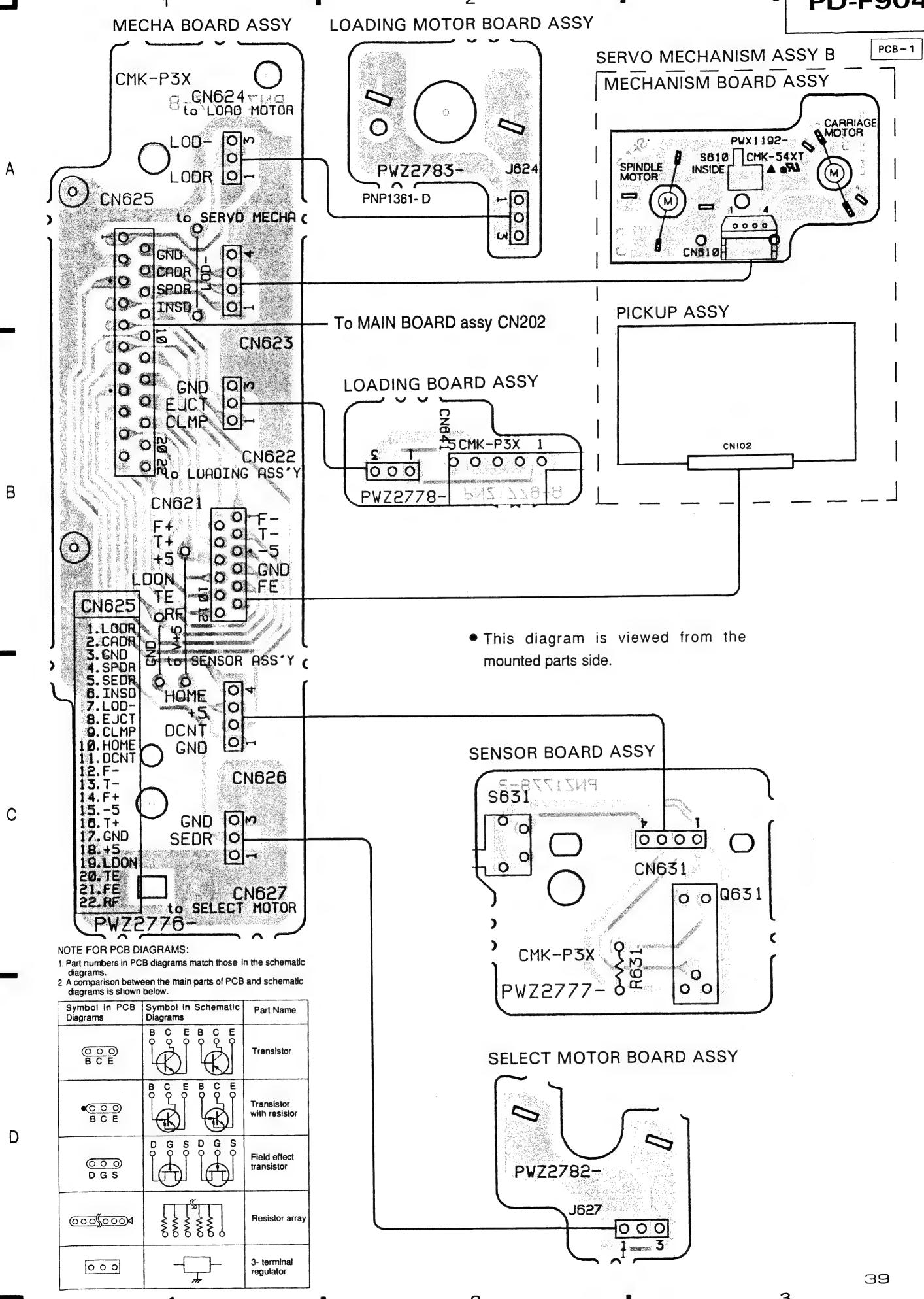
RACK BOARD B ASSY  
S653 EJECT  
S654 EJECT

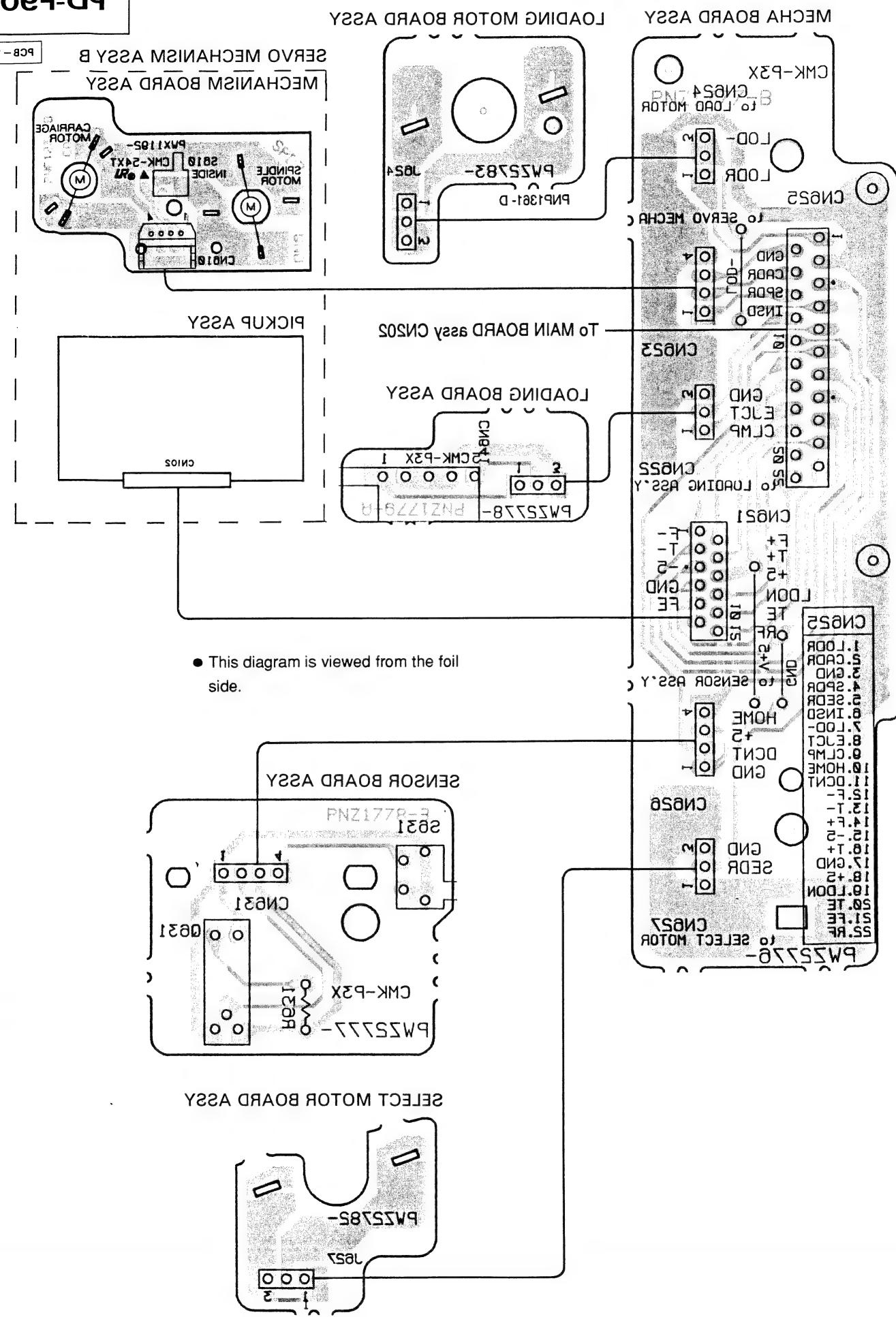


**SCH-1**  
MECHA BOARD ASSY, SENSOR BOARD ASSY,  
LOADING BOARD ASSY, SELECT MOTOR BOARD  
ASSY, LOADING MOTOR BOARD ASSY,  
MECHANISM BOARD ASSY

**SCH-1**  
MECHA BOARD ASSY, SENSOR BOARD ASSY,  
LOADING BOARD ASSY, SELECT MOTOR BOARD  
ASSY, LOADING MOTOR BOARD ASSY,  
MECHANISM BOARD ASSY

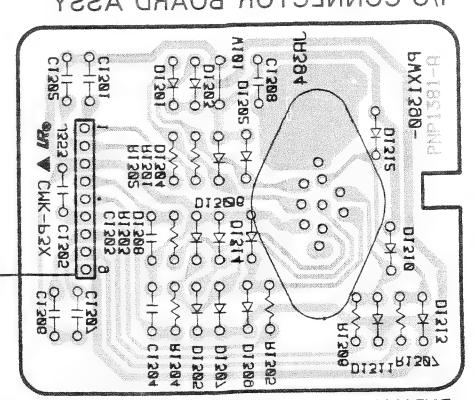
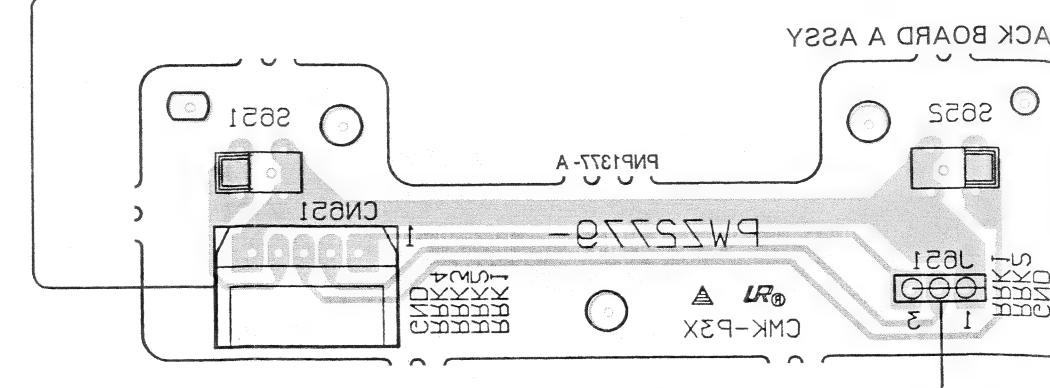
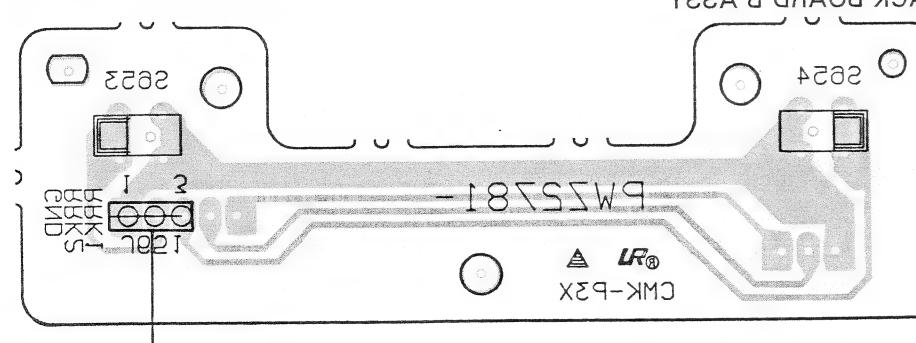
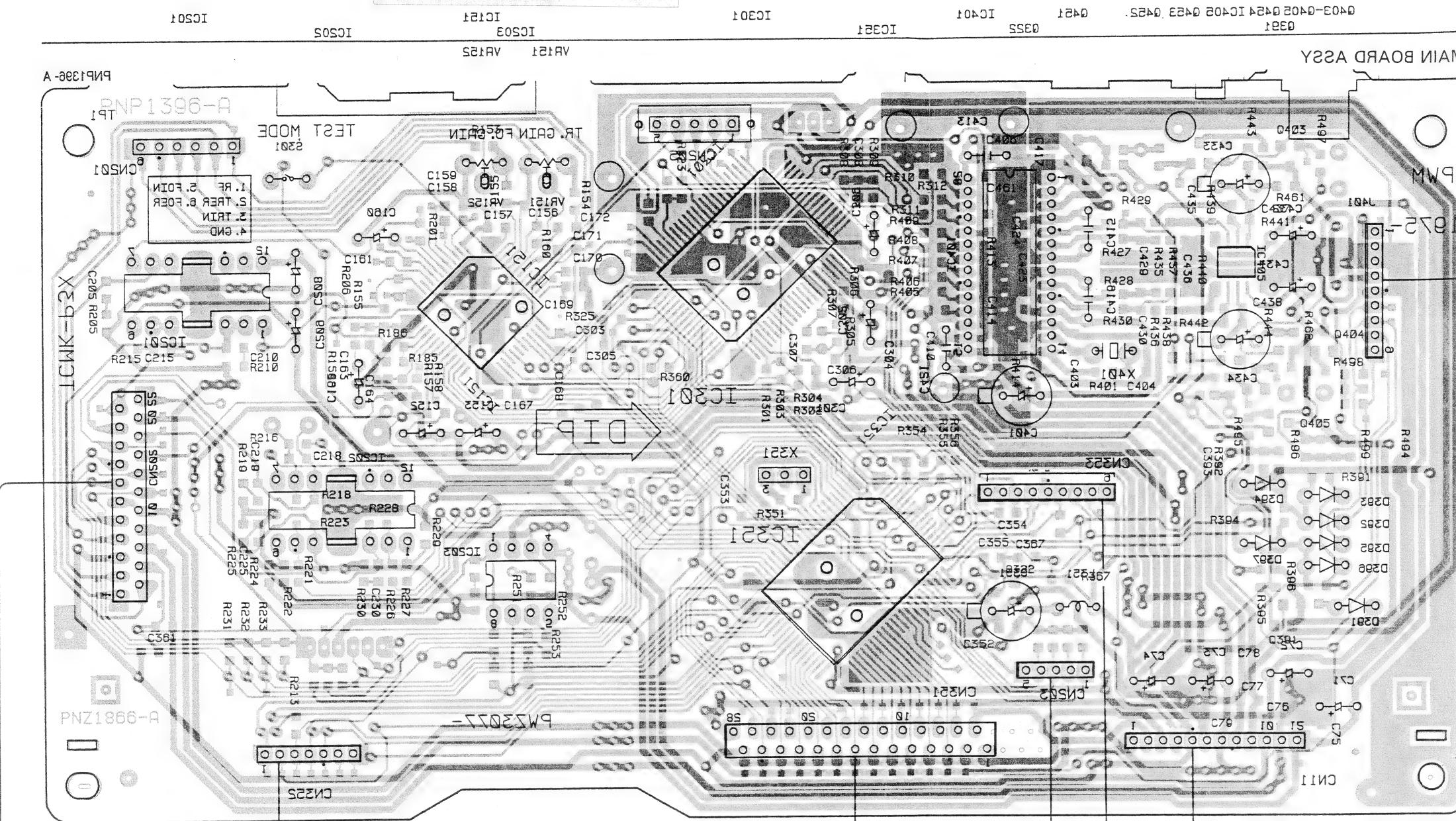
**SCH-1**





(2). MAIN BOARD ASSY, OUTPUT BOARD ASSY, BACK BOARD ASSY

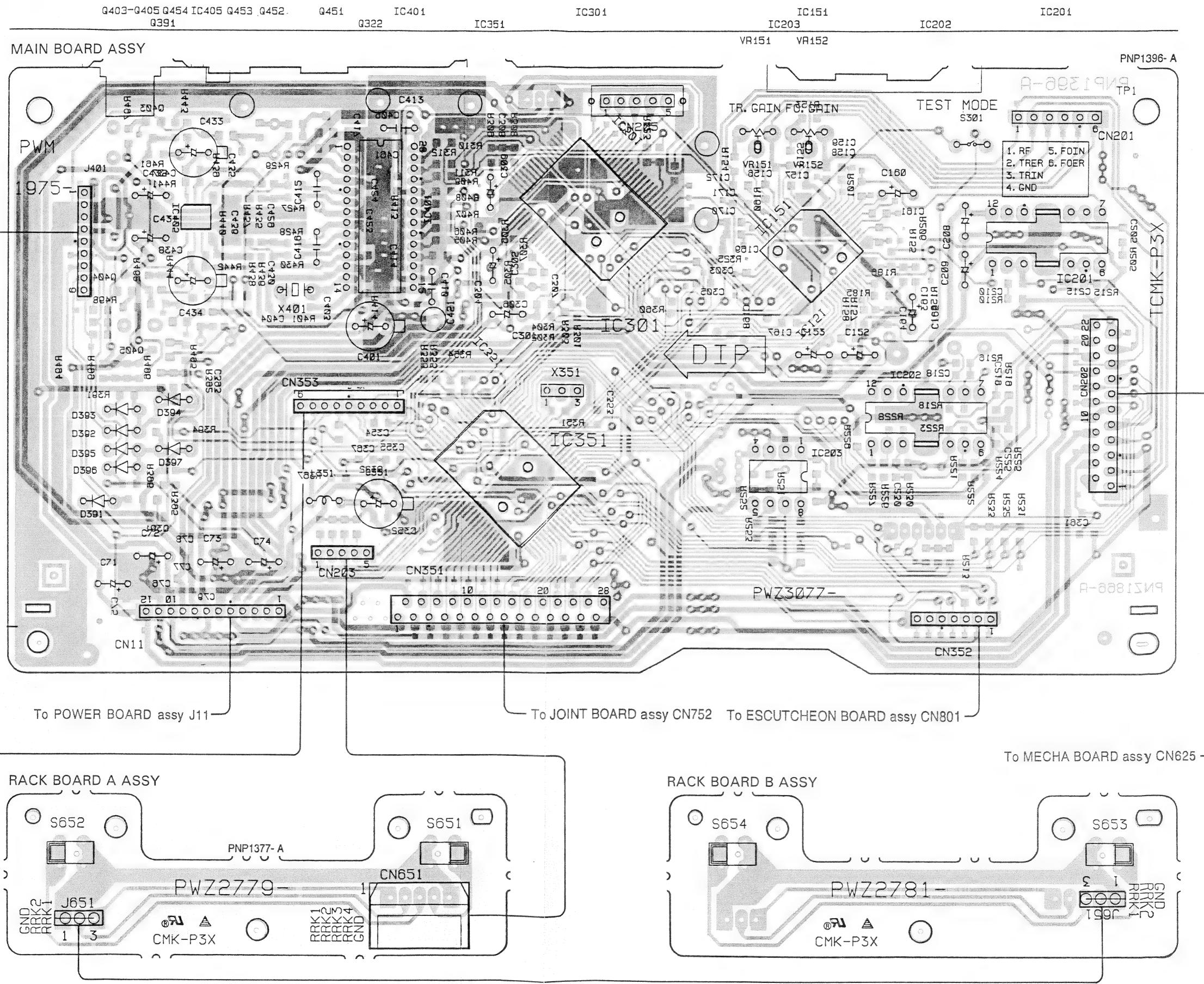
- This diagram is viewed from the gray colored foil side.
- This PCB is double side.



- This diagram is viewed from the foil side.

(2). MAIN BOARD ASSY, OUTPUT BOARD ASSY, RACK BOARD A ASSY,  
RACK BOARD B ASSY AND I/O CONNECTOR BOARD ASSY

- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.



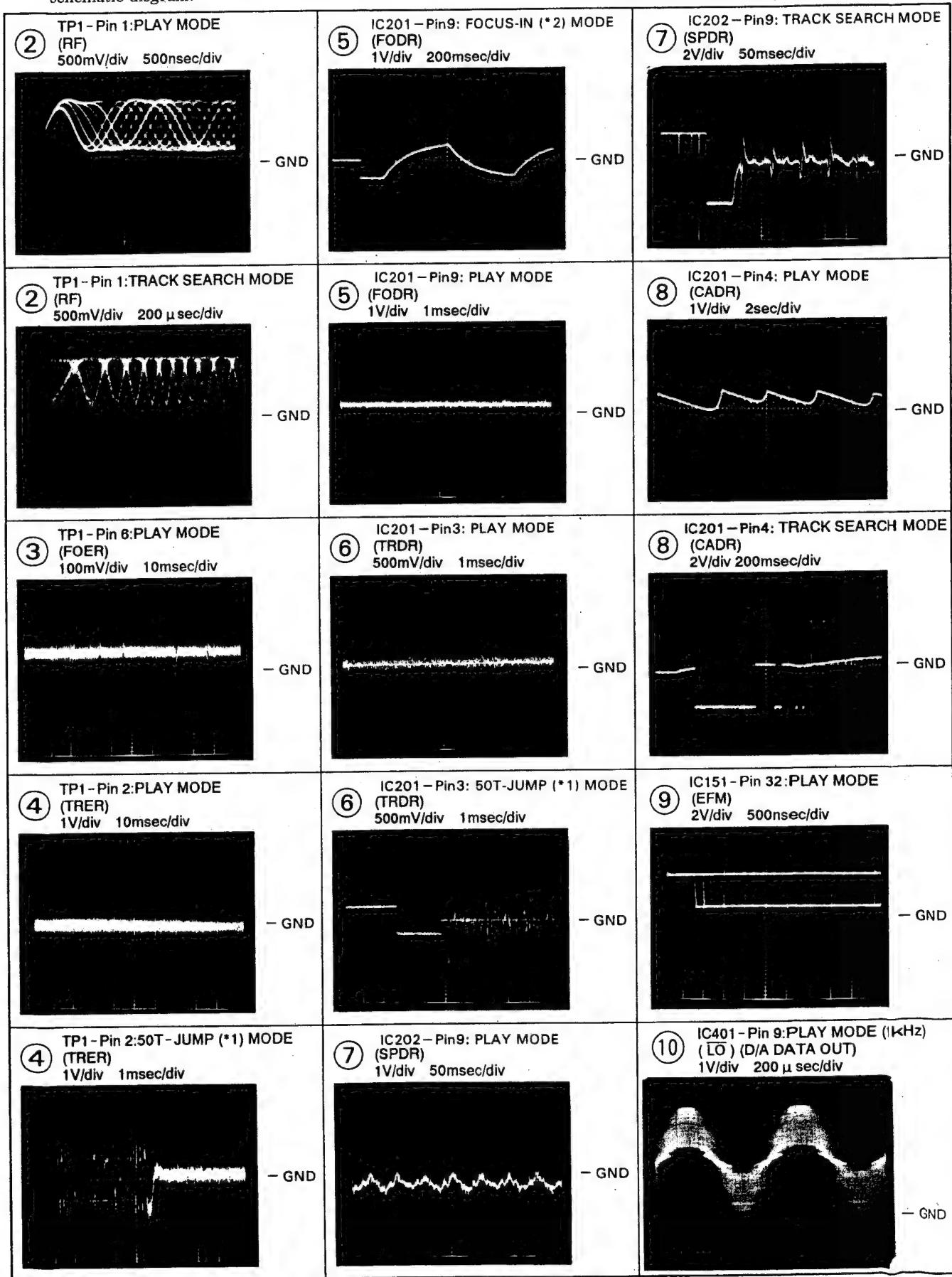
D  
• This diagram is viewed from the mounted parts side.

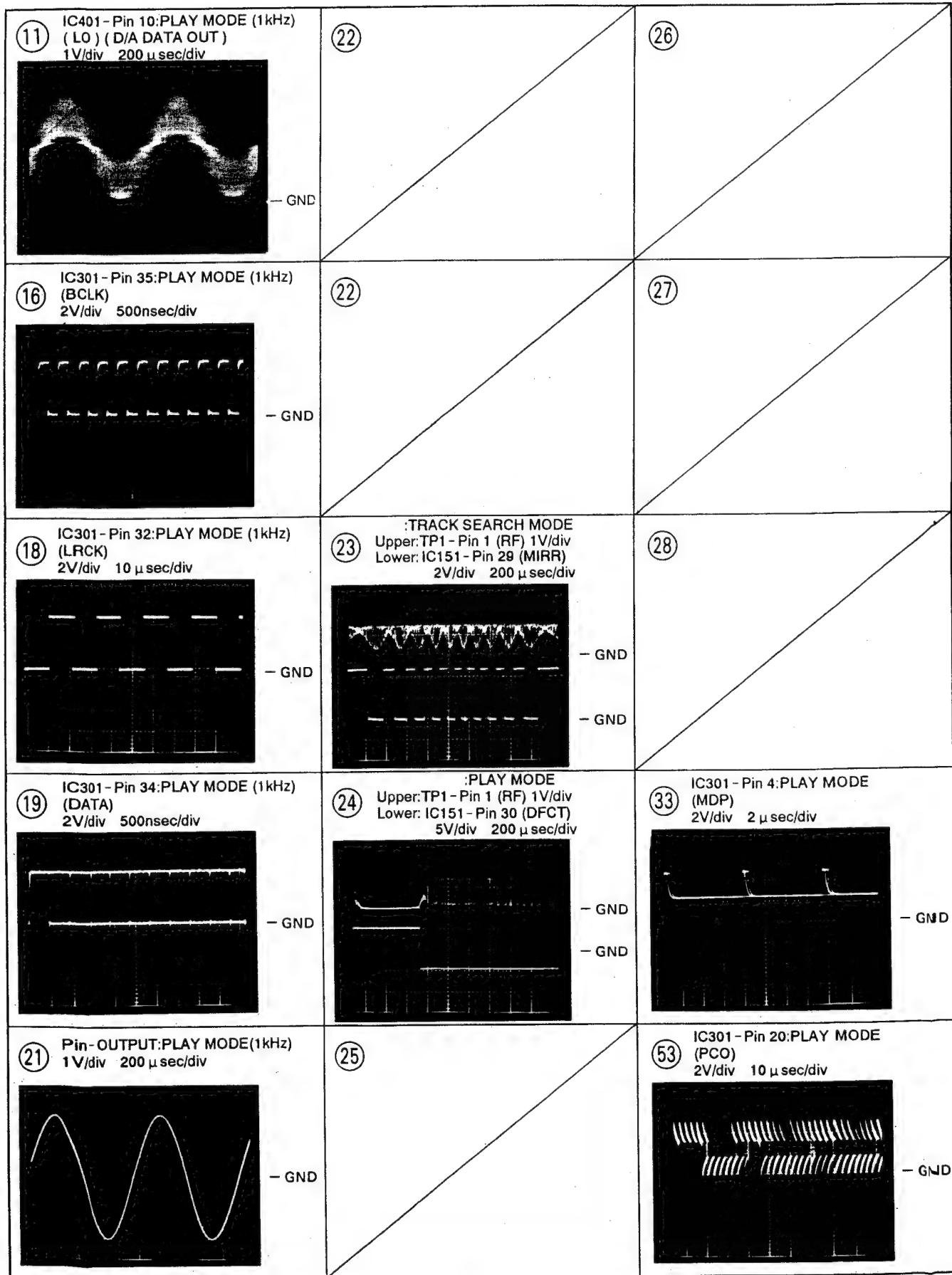
## Waveforms

Note: The encircled numbers denote measuring point in the schematic diagram.

\*1 50T-JUMP: After switching to the pause mode,  
press the manual search key.

\*2 FOCUS-IN: Press the key without loading a disc.





● IC401  
[PD2026B (L)]

Pin No.	Voltage[V]
1	0
2	0
3	5
4	5
5	2. 4
6	2. 6
7	0
8	0
9	2. 6
10	2. 4
11	5
12	0
13	2. 4
14	2. 4
15	5
16	0
17	5
18	0
19	2
20	5
21	5
22	5
23	5
24	5
25	2. 4
26	2. 4
27	2. 4
28	5

● IC301  
(CXD2500BQ)

Pin No.	Voltage[V]	Pin No.	Voltage[V]	Pin No.	Voltage[V]
1	5	31	1.3-2.2	61	0
2	2. 1	32	2. 5	62	2. 5
3	5	33	5	63	0
4	2. 6	34	2. 5	64	0
5	2. 2	35	2. 5	65	0
6	5	36	2. 5	66	3.3-4.8
7	0	37	2. 5	67	5
8	5	38	2. 5	68	0
9	0	39	0	69	2.1-3
10	0	40	5	70	5
11	2. 1	41	2. 5	71	5
12	0	42	5	72	5
13	1	43	2. 5	73	5
14	0.9-1.3	44	0	74	5
15	0	45	5	75	5
16	2	46	4. 4	76	0
17	0	47	0	77	5
18	2. 5	48	0	78	5
19	2. 4	49	0-0.3	79	5
20	2. 4	50	1. 2	80	0
21	0	51	1. 2		
22	2. 5	52	0		
23	5	53	2. 5		
24	2. 5	54	2. 5		
25	0. 2	55	0		
26	0	56	2. 9		
27	2. 5	57	2. 5		
28	0	58	2. 5		
29	0	59	0		
30	0	60	0		

● IC201 (LA6520)

Pin No.	Voltage[V]
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0. 1
12	8. 4
FIN	-8. 2

● IC202 (LA6520)

Pin No.	Voltage[V]
1	0
2	0
3	0
4	0
5	0
6	0
7	1. 7
8	1. 7
9	0.5-0.8
10	0
11	0. 1
12	8. 4
FIN	-8. 2

● IC151  
(CXA1372Q)

Pin No.	Voltage[V]	Pin No.	Voltage[V]
1	0	2 5	5
2	0	2 6	0
3	0	2 7	5
4	0	2 8	0
5	-0. 3	2 9	0
6	0	3 0	-5
7	0. 2	3 1	2. 5
8	0	3 2	2. 5
9	0	3 3	5
10	5	3 4	-1. 5
11	0	3 5	-1. 7
12	0	3 6	5
13	0	3 7	-0. 7
14	0-0.3	3 8	-1. 5
15	0	3 9	0
16	-4	4 0	0. 8
17	1. 3	4 1	-5
18	0	4 2	0
19	-5	4 3	0
20	5	4 4	0
21	5	4 5	0
22	5	4 6	0
23	5	4 7	0
24	5	4 8	0

● IC351  
(PD3315A)

Pin No.	Voltage[V]						
1	5	2 1	0	4 1	-25. 7	6 1	5
2	5	2 2	0	4 2	-25. 7	6 2	0
3	5	2 3	0	4 3	-25. 7	6 3	5
4	0	2 4	5	4 4	-25. 7	6 4	5
5	0	2 5	5	4 5	-25. 7	6 5	5
6	0	2 6	5	4 6	-25. 7	6 6	0
7	0	2 7	5	4 7	-25. 7	6 7	5
8	5	2 8	0	4 8	-25. 7	6 8	5
9	0	2 9	5	4 9	-25. 7	6 9	5
10	2. 3	3 0	0	5 0	-25. 7	7 0	5
11	2. 3	3 1	5	5 1	-25. 7	7 1	5
12	5	3 2	-25. 7	5 2	5	7 2	5
13	5	3 3	-25. 7	5 3	-0. 9	7 3	5
14	0	3 4	-25. 7	5 4	-0. 9	7 4	0
15	0	3 5	-25. 7	5 5	-0. 9	7 5	0
16	0	3 6	-25. 7	5 6	-0. 9	7 6	5
17	0	3 7	-25. 7	5 7	5	7 7	0
18	0	3 8	-25. 7	5 8	5	7 8	0
19	5	3 9	-25. 7	5 9	5	7 9	5
20	0	4 0	-25. 7	6 0	5	8 0	5

1

2

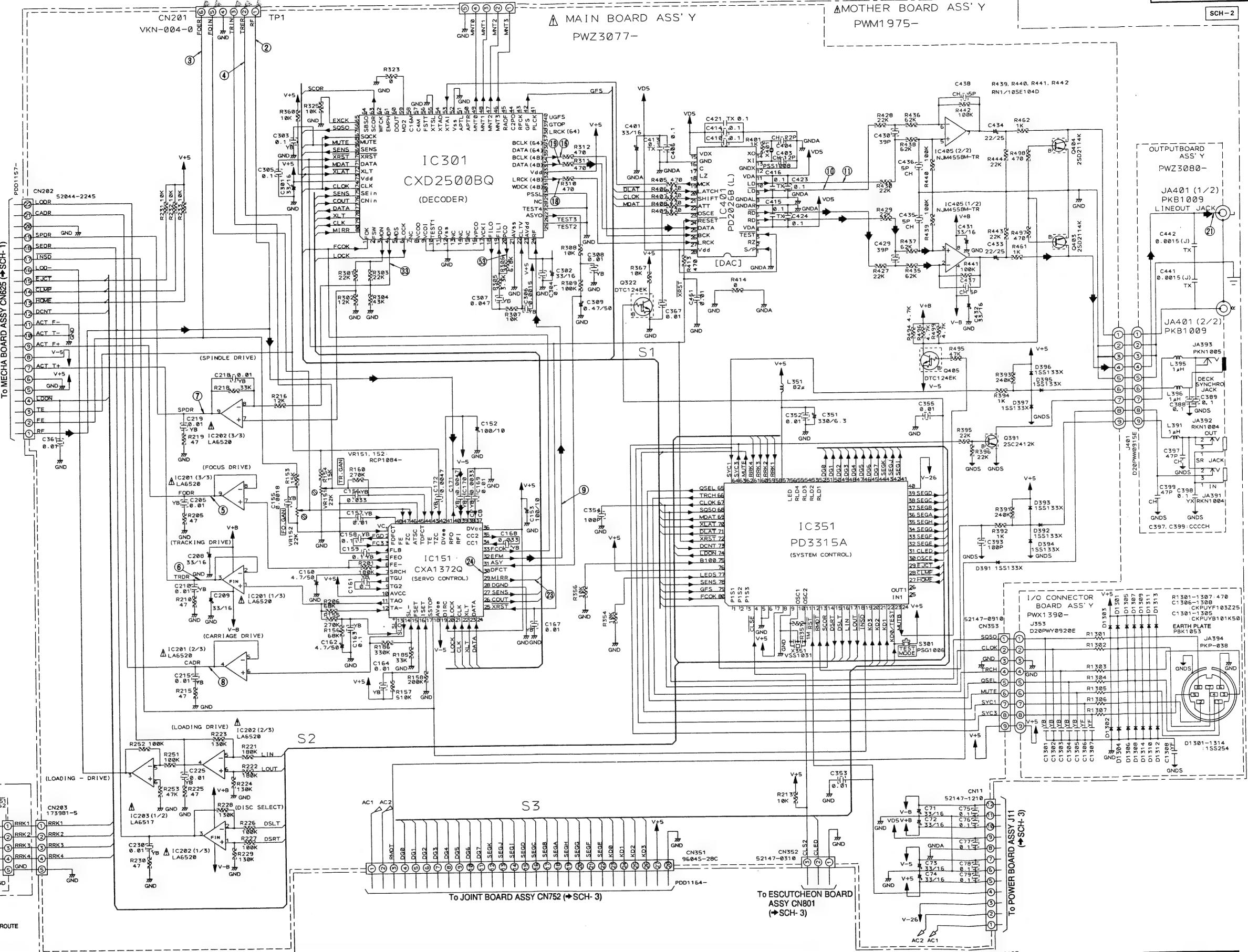
3

4

5

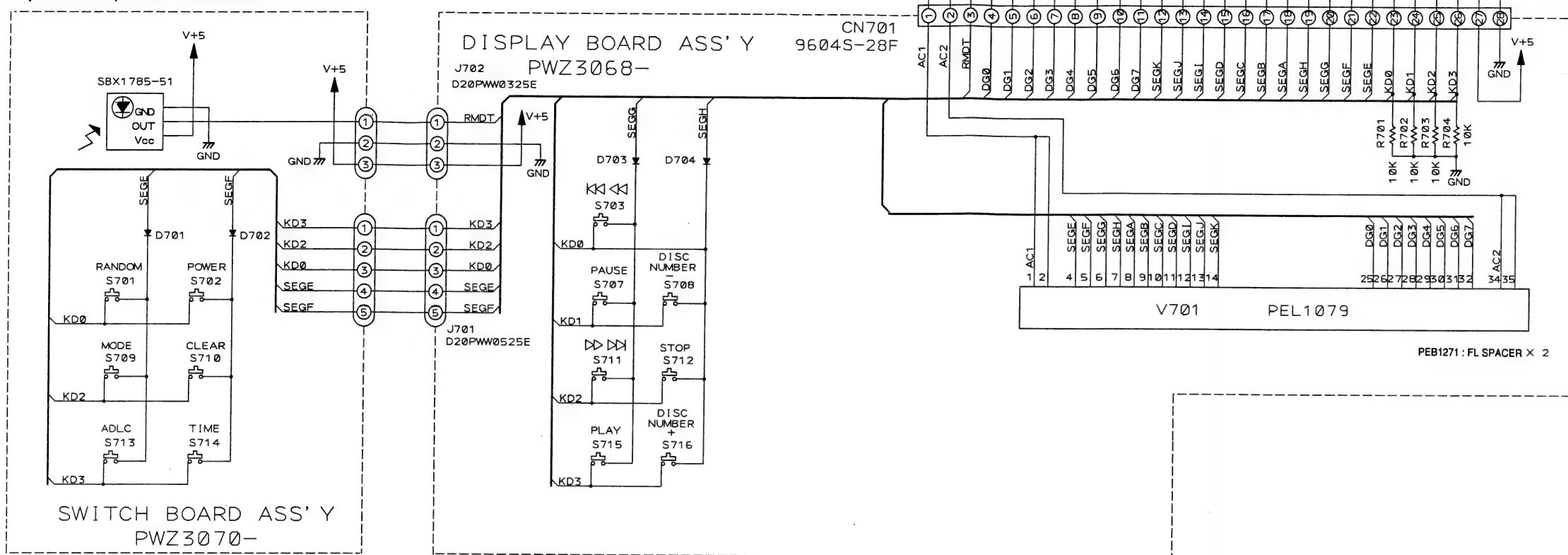
6

	Voltage [V]	
	Emitter	Collector
Q322	0	5
Q391	0	2.6
Q403	0	0
Q404	0	0
Q405	-5	5
Q451	5	5
Q452	5	5
Q453	0	0
Q454	0	0
Q701	0	0
Q702	0	-4.4
Q703	0	2.1
Q704	0	0
Q705	0	-0.3



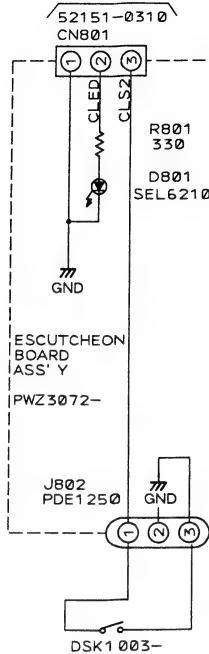
## (3). POWER BOARD ASSY, DISPLAY BOARD ASSY, SWITCH BOARD ASSY, ESCUTCHEON BOARD ASSY AND JOINT BOARD ASSY

**NOTE :**  
Any diode without part number indicates 1SS254.  
Any tact sw without part number indicates PSG1006.



SCH - 3

To MAIN BOARD ASSY CN352  
(→ SCH - 2)



To MAIN BOARD ASSY CN11 (→ SCH-2)

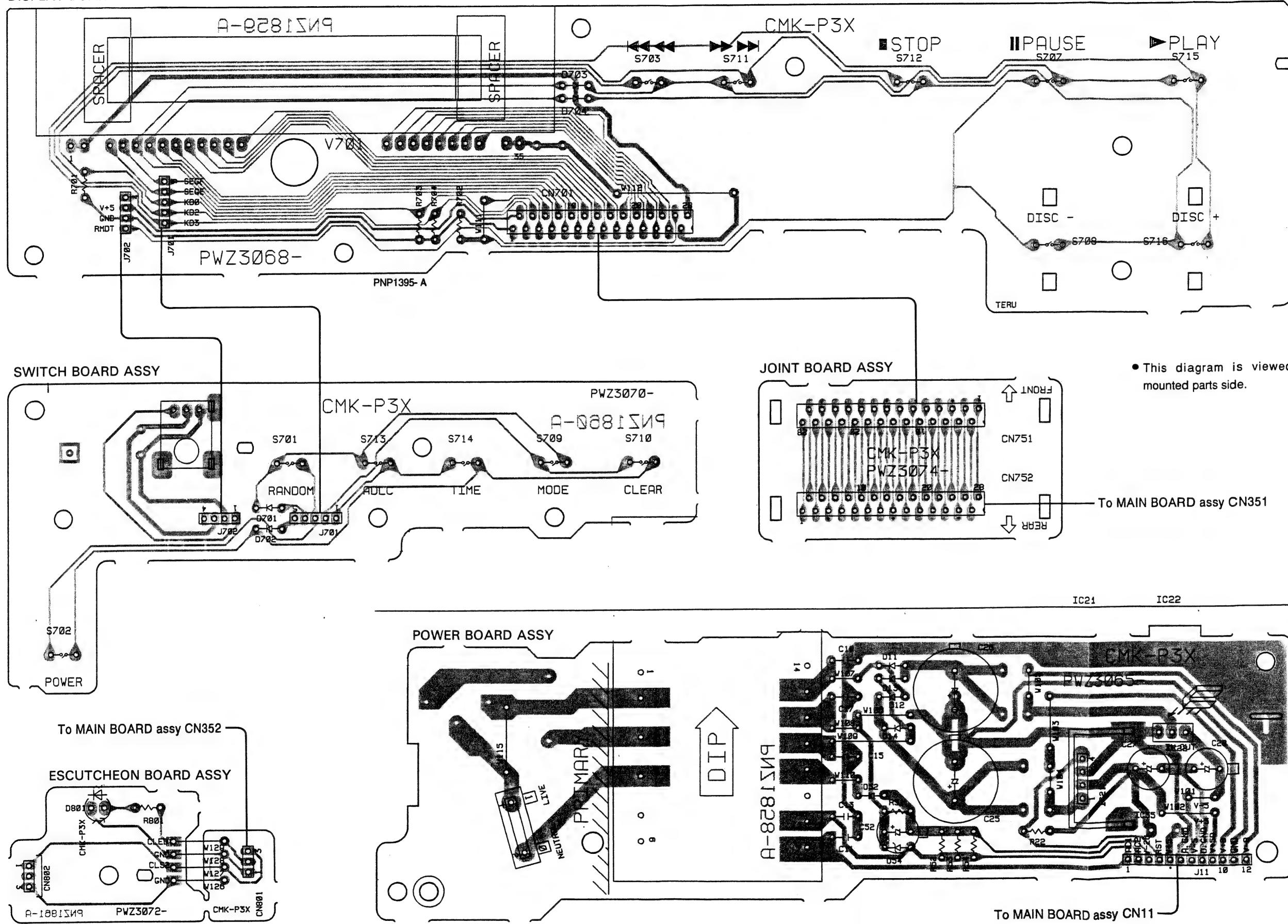
SCH - 3

POWER BOARD ASSY, DISPLAY BOARD ASSY,  
SWITCH BOARD ASSY, ESCUTCHEON BOARD ASSY,  
JOINT BOARD ASSY

POWER BOARD ASSY, DISPLAY BOARD ASSY,  
SWITCH BOARD ASSY, ESCUTCHEON BOARD ASSY,  
JOINT BOARD ASSY

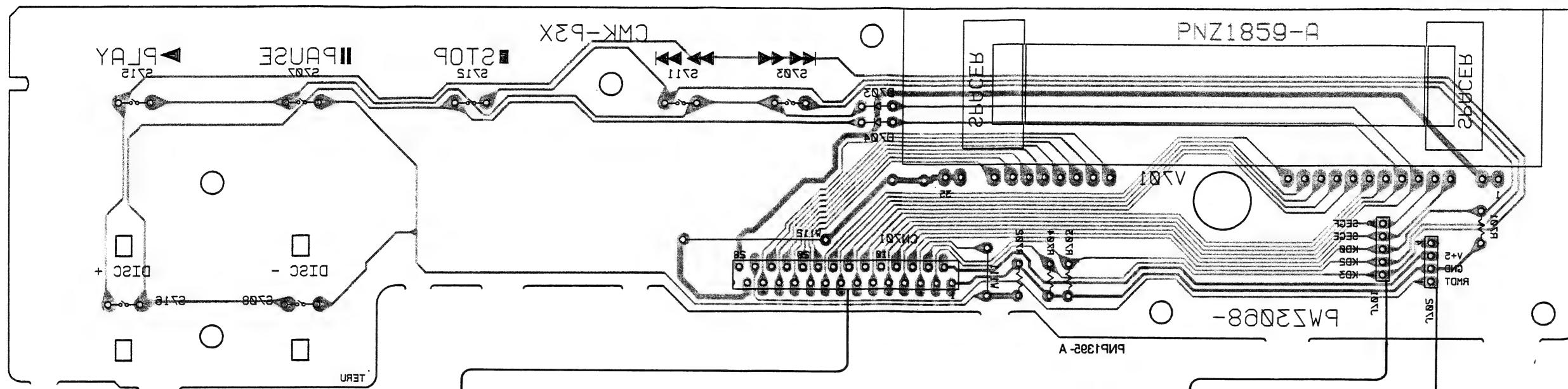
SCH - 3

DISPLAY BOARD ASSY



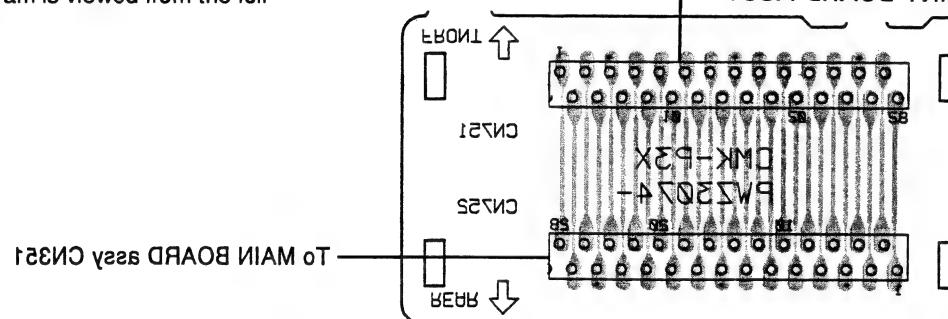
- This diagram is viewed from the mounted parts side.

## DISPLAY BOARD ASSY

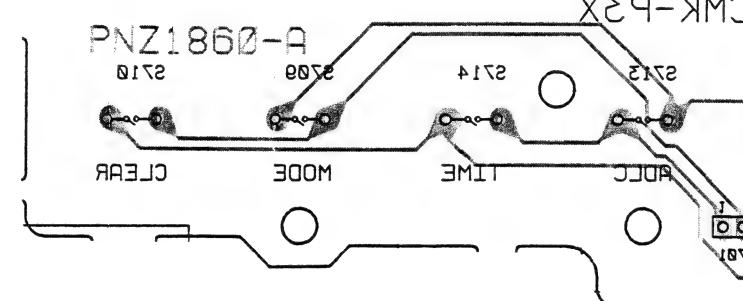


• This diagram is viewed from the foil side.

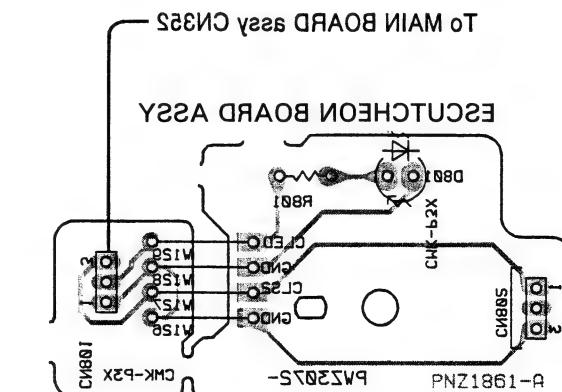
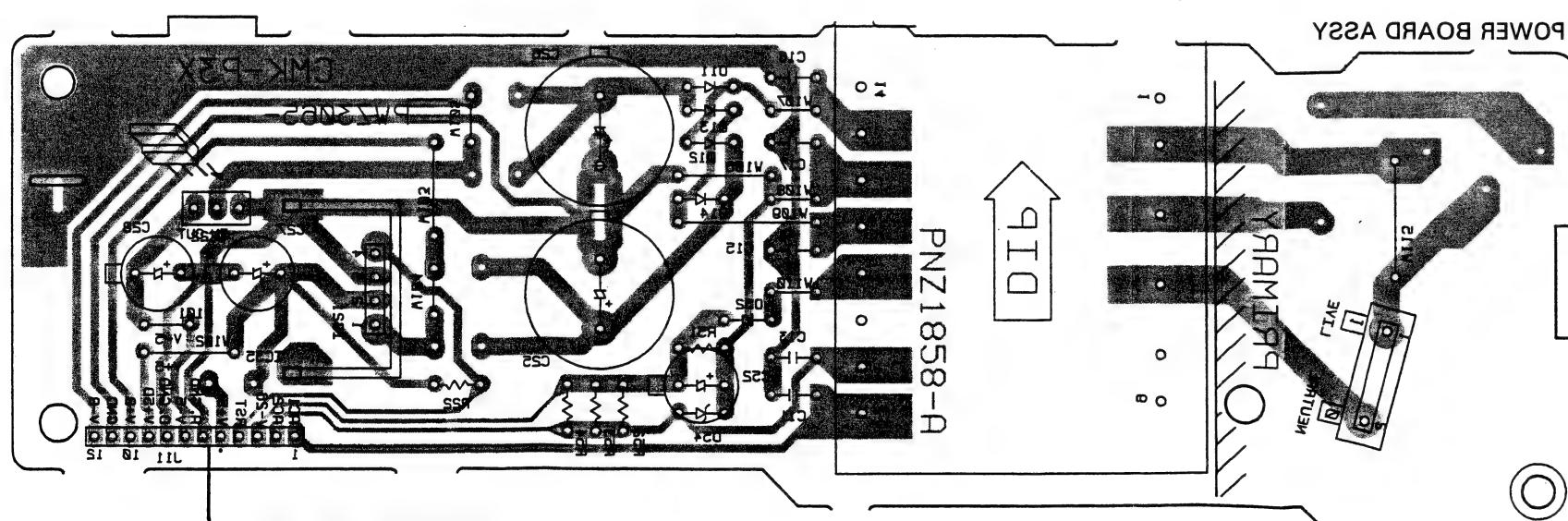
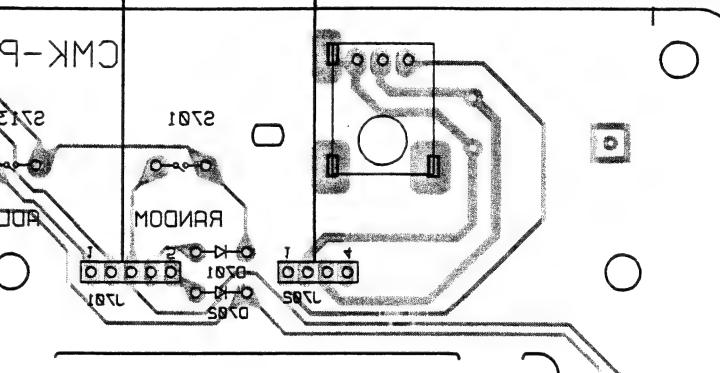
## JOINT BOARD ASSY



## PMZ3078-A

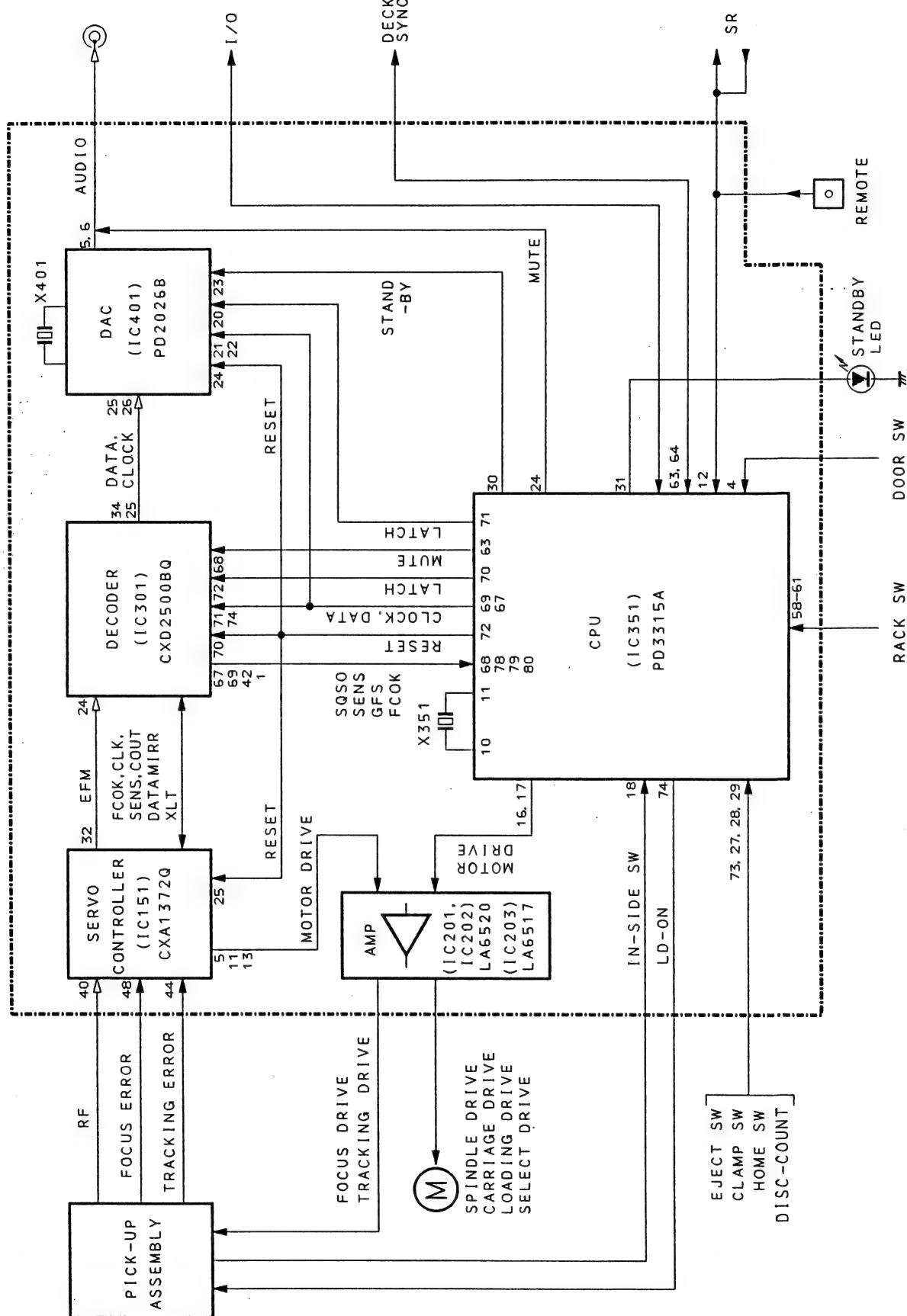


## SWITCH BOARD ASSY



## 10. BLOCK DIAGRAM

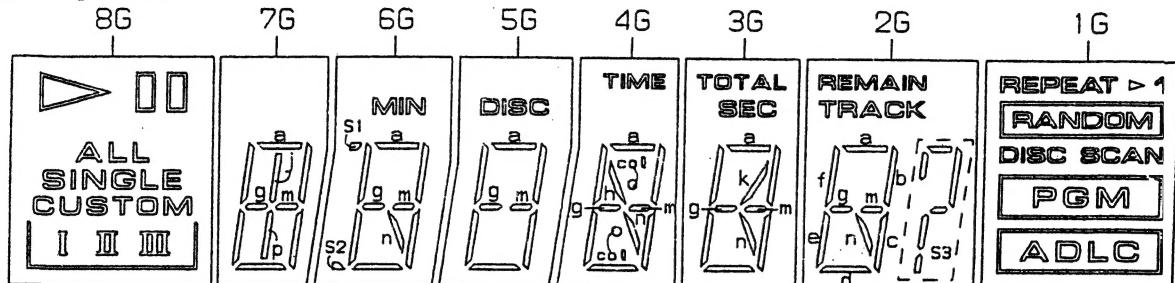
PD-F904



## 11. FL INFORMATION

### ■ PEL1079 (V701 : DISPLAY BOARD ASSY)

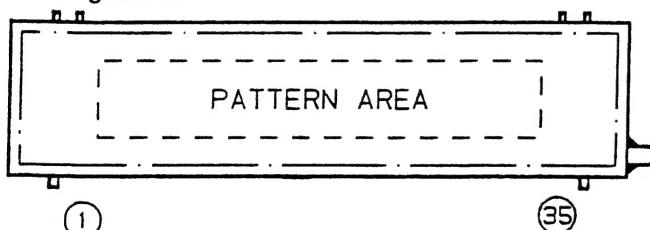
- FL Tube
- Grid Assignment



- Pin Connection

PIN NO.	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	
CONNECTION	F	F	N	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	1	1	P	5	6	7	8	1	2	3	4	9	0	1	P	P	P	P	P	P	P	G	G	G	G	P

- Pin Assignment



NOTE  
 1) F1, F2 --- Filament  
 2) NP ----- No pin  
 3) DL ----- Datum Line  
 4) 1G~8G --- Grid

- Anode Connection

	8G	7G	6G	5G	4G	3G	2G	1G	
P1	<b>ALL</b>	a	a	a	a	a	a		<b>RANDOM</b>
P2	<b>SINGLE</b>	b	b	b	b	b	b	-	
P3	<b>I</b>	c	c	c	c	c	c	-	
P4	<b>II</b>	d	d	d	d	d	d		<b>ADLC</b>
P5	<b>III</b>	e	e	e	e	e	e		<b>PGM</b>
P6	<b>CUSTOM</b>	f	f	f	f	f	f		<b>DISC</b>
P7	-	g, m	g, m	g, m	g, m	g	g, m		<b>SCAN</b>
P8	-	-	S1, S2	-	col	m	S3	-	
P9	<b>IV</b>	j, p	n	-	h, n	k, n	n	-	
P10	<b>V</b>	-	<b>MIN</b>	<b>DISC</b>	-	<b>SEC</b>	<b>TRACK</b>	> 1	
P11	<b>VI</b>	-	-	-	TIME	TOTAL	REMAIN	REPEAT	

## 12. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

### ■ PD3315A (IC351 : MAIN BOARD ASSY)

#### ● System Control Micro-computer

#### ● Pin Function

No.	Symbol	Pin Name	I/O	Description
1 3	P04/AN4 P06/AN6	P1S1 P1S3	I	+1 disc detection input (only models +1 disc installed) (Not used)
4	P07/AN7	CLSE	I	Door close OK SW (L: Close OK)
5	AVss	No use	GND	(Reference voltage for A/D converter): GND
6	TEST	No use	GND	(Test terminal for maker): GND
7	X2	No use	—	(Sub clock oscillator connected terminal): OPEN
8	X1	No use	+5V	(Sub clock oscillator connected terminal): Vcc
9	Vss	Vss	GND	GND
10	OSC1	OSC1	—	Connected to System clock oscillator (8MHz)
11	OSC2	OSC2	—	
12	RES	RST	I	CPU reset (L: Reset)
13	P10/IRQ0	RDMT	I	Remote control data input
14	P11/IRQ1	SCOR	I	Sub code sinc S0+S1 input
15	P12/IRQ2	DRST	O	Selector output port Right direction (DRST: H, DSLT: L)
16	P13/IRQ3	DSLT	O	Left direction (DRST: L, DSLT: H)
17	P14/IRQ4	LIN	O	Loading output port Clump (LIN: L, LOUT: H) Return (LIN: H, LOUT: L)
18	P15/IRQ5 /TMOE	LOUT	O	
19	P16/EVENT	INSD	I	Slider INSIDE SW input (L: INSIDE)
20 22	P33/FS27 P31/FS25	KD3 KD1	I	Key • data input
23	P30/FS24	KD0/TEST	I	Key • data input TEST mode request input (H: TEST, L: Normal mode)
24	P47/FS23	MUTB	O	Muting output (L: MUTE)

No.	Symbol	Pin Name	I/O	Description
25	P46/FS22	IN1	O	+1 disc eject output port Eject (IN1: L, OUT1: H) Load (IN1: H, OUT1: L) (only models +1 disc installed) (Not used)
26	P45/FS21	OUT1	O	
27	P44/FS20	HOME	I	Disc selector home SW (L: Home)
28	P43/FS19	CLMP	I	Clump SW (L: Clump OK)
29	P42/FS18	EJCT	I	Loading out SW (L: Loading out OK)
30	P41/FS17	OSCE	O	OSCE output (H: when Standby)
31	P40/FS16	CLED	O	LED output for PLAY INDICATOR (LED Blinking: Not home)
32 35	P50/FS15 P53/FS12	SEG E SEG H	O	Segment output for FL drive
36 39	P54/FS11 P57/FS8	SEG A SEG D	O	
40	P17/Vdisp	Vdisp	I	-26V
41 43	P60/FD0/FS7 P62/FD2/FS5	SEG I SEG K	O	Segment output for FL drive
44 48	P63/FD3/FS4 P67/FD7/FS0	D7 D3	O	Digit output for FL drive
49 51	P70/FD8 P72/FD10	D2 D0	O	
52	P73/FD11	RLD1	O	LED output for Rack1 (Not used)
53	P74/FD12	RLD2	O	LED output for Rack2 (Not used)
54	P75/FD13	RLD3	O	LED output for Rack3 (Not used)
55	P76/FD14	RLD4	O	LED output for Rack4 (Not used)
56	P77/FD15	LED	O	Output for LED
57	Vcc	Vcc	—	+5V

No.	Symbol	Pin Name	I/O	Description
58	P80	RRK1	I	Rack1 Yes/No SW (L: No) (only models with 100 discs installed)
59	P81	RRK2	I	Rack2 Yes/No SW (L: No) (only models with 100 discs installed)
60	P82	RRK3	I	Rack3 Yes/No SW (L: No) (Rack1 SW for models with 50 discs installed)
61	P83	RRK4	I	Rack4 Yes/No SW (L: No) (Rack2 SW for models with 50 discs installed)
62	P84	MUTE	O	Muting OUTPUT (H: MUTE) (For I/O INTERFACE)
63	P85	SYC3	O	DECK SYNCHRO signal output (For I/O INTERFACE)
64	P86	SYC1	I	DECK SYNCHRO signal input (For I/O INTERFACE)
65	P87	QSEL	O	Signal output for QDATA descriimination (H: During output of Q DATA) (For I/O INTERFACE)
66	P90/PWM	TRCH	O	Data serial output (For I/O INTERFACE)
67	P91/SCK1	CLOK	O	LSI serial clock output (For I/O INTERFACE)
68	P92/SI1	SQSO	I	Sub code Q data serial input (For I/O INTERFACE)
69	P93/SO1	MDAT	O	LSI control data serial output
70	P94/SCK2	XLAT	O	LSI control data lutch pulse
71	P95/SI2/CS	DLAT	O	DAC control data lutch pulse
72	P96/SO2	XRST	O	Reset output for each LSI
73	P97/UD	DCNT	I	Disc count pulse input
74	PA0	LDON	O	Laser diode output (L: ON, H: OFF)

No.	Symbol	Pin Name	I/O	Description
75	PA1	B100	I	Switching port for 50/100 discs mount model (H: 50 discs)
76	AVcc	AVcc	+5V	+5V
77	PO0/AN0	LEDS	I	Switching port for CLED (H: Jointly used for standby)
78	PO0/AN1	SENS	I	LSI operating status multi-mode input
79	PO1/AN2	GFS	I	Frame sync lock input (H: OK)
80	PO2/AN3	FCOK	I	Focus OK input (H: OK)

## ■ BLOCK DIAGRAM (System Control Section)

